



August 30, 2017

Tom Pingel
Operations Supervisor

Via Email: tpingel@sioux-city.org

Mark Simms
Utilities Director

Via Email: msimms@sioux-city.org

Re: Big Ox Energy Pretreatment Permit Application

As requested Big Ox Energy Siouxland (BOE) has completed the enclosed permit application, however, "Section F: Characteristics of Discharge" is not completed pending the laboratory test results submitted for Priority Pollutants on the effluent wastewater from BOE. This is quite an extensive panel, that had not been a requirement of the permit application previously, and was not communicated as a new permit application requirement in the July 17, 2017 letter submitted by Mr. Simms to Mr. Osbahr. The updated permit application was not received until August 4, 2017. A sample has been collected and sent off for the required analysis and a final report shall be submitted to the City when the report is available.

The permit application includes the following:

- Signed Permit Application including requested flow diagrams and facility schematics
- Signed Slug Control Plan
- Signed Hauled Waste Approval Plan with a summary of the wastes being processed
 - Material Profile Form
 - Chain of Custody
- Signed Catastrophic Failure Plan

If you have any questions, please let me know.

Sincerely,

A handwritten signature in blue ink that reads "Desiree McCaslen". The signature is written in a cursive, flowing style.

Desiree McCaslen

Director of Regulatory Compliance

Cc: Paul Marshall, EPA Region 7
Bob Livermore, South Sioux City Public Works Director



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Note to Signing Official: In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information and data provided in this permit application, which identifies the nature and frequency of discharge, shall be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2.

SECTION A – GENERAL INFORMATION

1. Facility Name Big Ox Energy Siouxland LLC Federal ID No.

2. Operator Name Big Ox Energy LLC

Is The operator identified above the owner of the facility? (Yes) No

If no, provide the name and address of the owner and submit a copy of the contract and /or other documents indicating the operator's scope of responsibility for the facility.

3. FACILITY ADDRESS

1616 D. Ave South Sioux City NE 68776

Street City State Zip Jurisdiction

4. MAILING ADDRESS (if different)

Same as above

Street City State Zip

5. DESIGNATED SIGNATORY AUTHORITY OF THE FACILITY:

Attach additional information for each authorized representative:

Name Desiree McCaslen Title Regulatory Compliance Director

Address 1616 D Ave City South Sioux State NE Zip 68776

Phone 920-615-2620 Email Address dmccaslen@bigoxenergy.com

6. DESIGNATED FACILITY CONTACT:

Name Perry Winkler Title Plant Manager

Phone 920-615-1459 Email Address pwinckler@bigoxenergy.com

7. DESIGNATED BILLING CONTACT:

Name Talitha Anderson Title Accounts Payable Team Lead

Phone 920-425-7192 Email Address tanderson@boeteams.com



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SECTION B – BUSINESS ACTIVITY

1. If your facility employs or will be employing processes in any of the industrial categories or business activities listed below (regardless of whether they generate wastewater, waste, sludge or hazardous wastes) place a check beside the category of business activity (check all that apply)

Industrial Categories*

Airport Deicing	<input type="checkbox"/>	Aluminum Forming	<input type="checkbox"/>	Asbestos Manufacturing	<input type="checkbox"/>	Battery Manufacturing	<input type="checkbox"/>
Builders Paper and Board Mills	<input type="checkbox"/>	Carbon Black Manufacturing	<input type="checkbox"/>	Cement Manufacturing	<input type="checkbox"/>	Centralized Waste Treatment	<input type="checkbox"/>
Chemical Formulators and Packagers	<input type="checkbox"/>	Coil Coating	<input type="checkbox"/>	Copper Forming	<input type="checkbox"/>	Dairy Products Processing	<input type="checkbox"/>
Electrical and Electronic Components	<input type="checkbox"/>	Electroplating	<input type="checkbox"/>	Explosives Manufacturing	<input type="checkbox"/>	Feedlots	<input type="checkbox"/>
Ferro Alloy Manufacturing	<input type="checkbox"/>	Fertilizer Manufacturing	<input type="checkbox"/>	Canned & Preserved Fruits and Vegetables Processing	<input type="checkbox"/>	Glass Manufacturing	<input type="checkbox"/>
Grain Mills	<input type="checkbox"/>	Gum and Wood Chemicals Mfging	<input type="checkbox"/>	Hospitals	<input type="checkbox"/>	Industrial Laundries	<input type="checkbox"/>
Ink Formulating	<input type="checkbox"/>	Inorganic Chemicals Manufacturing	<input type="checkbox"/>	Iron & Steel Manufacturing	<input type="checkbox"/>	Landfills or Incinerators	<input type="checkbox"/>
Leather Tanning and Finishing	<input type="checkbox"/>	Meat Products	<input type="checkbox"/>	Metal Finishing	<input type="checkbox"/>	Metal Molding and Casting	<input type="checkbox"/>
Metal Products & Machinery	<input type="checkbox"/>	Mineral Mining & Processing	<input type="checkbox"/>	Nonferrous Metals Forming & Metal Powders	<input type="checkbox"/>	Nonferrous Metals Manufacturing	<input type="checkbox"/>
Ore Mining and Dressing	<input type="checkbox"/>	Organic Chem., Plastic & Synthetic Fibers	<input type="checkbox"/>	Paint Formulating	<input type="checkbox"/>	Paving & Roofing Materials	<input type="checkbox"/>
Petroleum Refining	<input type="checkbox"/>	Pharmaceutical Manufacturing	<input type="checkbox"/>	Phosphate Manufacturing	<input type="checkbox"/>	Photographic Processing	<input type="checkbox"/>
Plastics Molding and Forming	<input type="checkbox"/>	Porcelain Enameling	<input type="checkbox"/>	Pulp, Paper & Paper Board	<input type="checkbox"/>	Rubber Processing	<input type="checkbox"/>
Canned & Preserved Seafood Processing	<input type="checkbox"/>	Soaps and Detergents	<input type="checkbox"/>	Steam Electric Power Generation	<input type="checkbox"/>	Sugar Processing	<input type="checkbox"/>
Textile Mills	<input type="checkbox"/>	Timber Products Processing	<input type="checkbox"/>	Transportation Equipment Cleaning	<input type="checkbox"/>	Urban Stormwater	<input type="checkbox"/>

***Environmental Protection Agency (EPA) Categorical Pretreatment standards may apply to facilities with the processes listed above. These facilities are termed "Categorical Users"**



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2. Give a brief description of all operations at this facility including primary products or services (attach additional sheets if necessary)

Anaerobic digestion of biodegradable food processing material for renewable energy generation and sale.
Wastewater neutralization and solids separation for Centrate, industrial and sanitary wastewater.

Indicate applicable Standard Industrial Classification (SIC) for all processes: (If more than one applies, list all)

A 4952	B	C	D
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Product Volume Estimate

Product Produced	Past Calendar	Amounts Per Day (Daily Units)		
		Maximum	Average	Maximum
Wastewater	Jan. 1 2017 - Present	2.1 MGD	1.75 MGD	0.3 MGD

Year Operations Began:

2016



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SECTION C – WATER SUPPLY

1. Sources (check all that apply)

Private Well ☐

Surface Water ☐

Municipal Water (Specify City): South ☒ Sioux City Other (Specify): ☐

2. Name on water bill: Big OX Energy

3. Street Address on bill (Street Number, City, State, Zip): 1616 D Ave, SSC NE 68716

4. Water Service Account Number:

5. List average water usage on premises (new facilities may estimate usage)

Type	Average Water Usage (gpd)	Indicate Estimated or Measured
A. Contact cooling water		
B. Non-contact cooling water		
C. Boiler feed		
D. Process <u>Usage</u>	<u>25,000 gpd</u>	<u>Measured</u>
E. Sanitary	<u>1,000 gpd</u>	<u>Estimated</u>
F. Air pollution control / <u>Gas Skid</u>	<u>15,000 gpd</u>	<u>Metered</u>
G. Contained in product		
H. Plant and equipment wash down	<u>Process Usage</u>	
I. Irrigation and equipment wash		
J. Other (specify):		
Total of A-J	<u>41,000 gpd</u>	

SECTION D – SEWER INFORMATION

FOR EXISTING BUSINESSES ONLY

1. Is the building presently connected to the public sanitary sewer system?

Yes



No



2. Sanitary sewer account number

Sioux City

92906-1015405

3. Have you applied for a sanitary sewer connection?

OR NEW BUSINESSES ONLY

1. Will you be occupying an existing vacant building (such as in an industrial park)?



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2. Have you applied for a building permit if a new facility will be constructed?

3. Will you be connected to the public sanitary sewer system?

4. List the size, descriptive location, and flow of each facility sewer line which connects to the City's sewer system. (If needed, attach additional information on another sheet)

Sewer Size	Descriptive Location of Sewer Connection or Discharge Point	Average Flow (GPD)

SECTION E – WASTEWATER DISCHARGE INFORMATION

1. Does (or will) this facility discharge any wastewater other than from restrooms to the city sewer

☐ No



Yes - If yes, complete the remainder of the application

2. Provide the following information on wastewater flow rate (new facilities may estimate)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hours/Day of discharge (e.g., 8hrs/day)	24 hr	_____	_____	_____	_____	_____	_____ →
Hours of Discharge (e.g., 9 a.m. to 5 p.m.)	24 hr	_____	_____	_____	_____	_____	_____ →



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3. Wastewater Flowrates

Peak Per Minute (gpm)	2100 gpm by Peak Design Capacity		
Annual Average Flowrate (GPD)	1.75 MGD X effluent Discharge Volume		
Max Daily Flow Rate (GPD)	3.0 MGD Design Capacity		
Discharge Type	Batch <input type="checkbox"/>	Continuous <input checked="" type="checkbox"/>	Other <input type="checkbox"/>

If Batch, Provide the Following:

Number of Batch Discharges per Week	Gallons Discharged per Batch	Time of Batch Discharges (Time of Day)	Flow Rate of Discharge (GPM)

4. **Schematic Flow Diagram:** For each major activity in which wastewater is or will be generated, draw a diagram of the flow of materials, products, water, and wastewater from the start of the activity to its completion, showing all unit processes. Indicate which processes use water and generate wastestreams. Include the average daily volume and maximum daily volume of each wastestream (new facilities may estimate). If estimates are used for flow data, this must be indicated. Number each unit process having wastewater discharges to the public sewer. Use these numbers when showing the unit processes in the building layout in Section H.

Facilities that checked activities in Section B (1) may be considered a Categorical Industrial User and should proceed to question 6 in section E.

Process Schematic Attachment #1



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5. For Non-Categorical Users Only: List an average wastewater discharge, maximum discharge, and type of discharge (batch, continuous, or both), for each plant process. Include the reference number from the process schematic that corresponds to each process. (New facilities should provide estimates for each discharge)

No.	Process Description	Avg Flow (GPD)	Maximum Flow (GPD)	Type of Discharge
1	GEM	1.735 MGD	3.0 MGD	Continuous
2	GAS SKID	0.015 MGD	—	Daily

Answer questions 6 and 7 only if you are subject to categorical pretreatment standards

6. For Categorical Users: Provide the totals of wastewater discharge flows of each of your processes or proposed processes. Include the reference number from the process schematic that corresponds to each process. (New facilities should provide estimates for each discharge)

No.	Regulated Process	Avg Flow (GPD)	Maximum Flow (GPD)	Type of Discharge
No.	Unregulated Process	Average Flow (GPD)	Maximum Flow (GPD)	Type of Discharge

7. For Categorical users subject to Total Toxic Organic (TTO) requirements, please provide the

	Yes	No
A. Does (or will) this facility use any of the toxic organics that are listed under the TTO standard of the applicable categorical pretreatment standards published by EPA?	<input type="checkbox"/>	<input type="checkbox"/>
B. Has a baseline monitoring report (BMR) been submitted which contains TTO information?	<input type="checkbox"/>	<input type="checkbox"/>
C. Has a toxic organics management plan (TOMP) been developed?	<input type="checkbox"/>	<input type="checkbox"/>



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8. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow metering equipment at this facility?

Currently

	Yes	No	NA
Flow Metering	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No	NA
Sampling	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Past

	Yes	No	NA
Flow Metering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Yes	No	NA
Sampling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If so, please indicate the present or future location of this equipment on the sewer schematic and describe the equipment below:

Facility has a 4 bottle discrete flow paced effluent sampler (Isco). The flow pacing is based of the effluent flow meter. The flow meter is connected to the facility process control system for discharge data tracking.

9. Are any process changes or expansions planned during the next three years that could alter wastewater volumes or characteristics? Consider production processes as well as air or water pollution treatment processes that may affect the discharge.

Yes ☐ No ☒

(If no, continue to question 11)

10. Briefly describe these changes and their effects on the wastewater volume and characteristics:
(Attach additional sheets if needed)

11. Are any materials or water reclamation systems in use or planned?

Yes ☐ No ☒ (If no, continue to section F)



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12. Briefly describe recovery process, substance recovered, percent recovered, and the concentration in the spent solution. Submit a flow diagram for each process (Attach additional sheets if needed)



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SECTION F – CHARACTERISTICS OF DISCHARGE

Priority Pollutant Information: Please indicate by selecting from the check boxes below for each listed chemical whether it is "Suspected to be Absent," "Known to be Absent," "Suspected to be Present," or "Known to be Present" in your manufacturing or service activity or generated as a by-product. Some compounds are known by other names. Compounds with an asterisk (*) indicate possible synonym listing- See Priority Pollutant synonym list in Appendix A.

Item No.	Chemical Compound	Suspected Absent	Known Absent	Suspected Present	Known Present	Item No.	Chemical Compound	Suspected Absent	Known Absent	Suspected Present	Known Present
1.	Asbestos (fibrous)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	66.	1,2-dichloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Cyanide (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	67.	1,1-dichloroethene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Antimony (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	68.	Trans-1,2-dichloroethene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Arsenic (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	69.	2,4-dichlorophenol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Beryllium (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	70.	1,2-dichloropropane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Cadmium (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	71.	(cis & trans) 1,3-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Chromium (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	72.	Dieldrin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Copper (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	73.	Diethyl phthalate*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Lead (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	74.	2,4-dimethylphenol*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Mercury (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	75.	Dimethyl phthalate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Nickel (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	76.	Di-n-butyl phthalate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Selenium (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	77.	Di-n-octyl phthalate*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Silver (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	78.	4,6-dinitro-2-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Thallium (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	79.	2,4-dinitrophenol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Zinc (total)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	80.	2,4-dinitrotoluene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Acenaphthene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	81.	2,6-dinitrotoluene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	Acenaphthylene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	82.	1,2-diphenylhydrazine*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18.	Acrolein	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	83.	Endosulfan 1*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Acrylonitrile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	84.	Endosulfan 11*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	Aldrin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	85.	Endosulfan sulfate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	Anthracene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	86.	Endrin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Benzene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	87.	Endrin aldehyde	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	Benzidine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	88.	Ethylbenzene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24.	Benzo (a) anthracene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	89.	Fluoranthene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25.	Benzo (a) pyrene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	90.	Fluorene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26.	Benzo (b) fluoranthene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	91.	Heptachlor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27.	Benzo (g,h,i) perylene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	92.	Heptachlor epoxide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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28.	Benzo (k) fluoranthene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	93.	Hexachlorobenzene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29.	a-BHC (alpha)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	94.	Hexachlorobutadiene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30.	b-BHC (beta)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	95.	Hexachlorocyclopentadiene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31.	d-BHC (delta)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	96.	Hexachloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32.	g-BHC (gamma)*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	97.	Indeno (1,2,3-cd) pyrene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33.	Bis (2-chloroethyl) ether*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	98.	Isophorone*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.	Bis (2-chloroethoxy) methane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	99.	Methylene chloride*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35.	Bis (2-chloroisopropyl) ether*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	100.	Naphthalene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36.	Bis (chloromethyl) ether*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	101.	Nitrobenzene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37.	Bis (2-ethylhexyl) phthalate*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	102.	2-nitrophenol*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38.	Bromodichloromethane *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	103.	4-nitrophenol*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39.	Bromoform*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	104.	N-nitrosodimethylamine*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40.	Bromomethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105.	N-nitroso-di-n-propylamine*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41.	4-bromophenylphenyl ether	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	106.	N-nitrosodiphenylamine*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42.	Butylbenzyl phthalate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	107.	PCB-1016*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43.	Carbon tetrachloride*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	108.	PCB-1221*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44.	Chlordane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	109.	PCB-1232*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45.	4-chloro-3-methylphenol*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	110.	PCB-1242*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46.	Chlorobenzene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	111.	PCB-1248*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47.	Chloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	112.	PCB-1254*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48.	2-chloroethylvinyl ether	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	113.	PCB-1260*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49.	Chloroform*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	114.	Pentachlorophenol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50.	Chloromethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	115.	Phenanthrene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51.	2-chloronaphthalene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	116.	Phenol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52.	2-chlorophenol*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	117.	Pyrene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53.	4-chlorophenylphenyl ether	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	118.	2,3,7,8-tetrachlorodibenzo- p-dioxin*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54.	Chrysene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	119.	1,1,2,2-tetrachloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55.	4,4 - DDD*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	120.	Tetrachloroethene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56.	4,4 - DDE*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	121.	Toluene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57.	4,4 - DDT*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	122.	Toxaphene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58.	Dibenzo (a,h) anthracene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	123.	1,2,4-trichlorobenzene	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59.	Dibromochloromethane *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	124.	1,1,1-trichloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60.	1,2-dichlorobenzene*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	125.	1,1,2-trichloroethane*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



For each of the chemical compounds which are indicated to be "Known Present," please list and provide the following data for each: (attach additional sheets if needed)

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PERMIT APPLICATION
Wastewater Contributor
Sioux City Pretreatment Program

SECTION G - TREATMENT

1. Is any form of wastewater treatment (see full list below) practiced at this Yes ☒ No ☐
2. Is any form of wastewater treatment (or changes to an existing wastewater treatment) planned for this facility within the next three years? (describe below) Yes ☐ No ☒

3. Treatment devices or processes used or proposed for treating wastewater or sludge (check as many as appropriate):

Air flotation	<input checked="" type="checkbox"/>	Cyclone	<input type="checkbox"/>	Grinding filter	<input type="checkbox"/>	Sedimentation	<input type="checkbox"/>	Solvent	<input type="checkbox"/>
Centrifuge	<input type="checkbox"/>	Filtration	<input type="checkbox"/>	Grit removal	<input type="checkbox"/>	Screen	<input checked="" type="checkbox"/>	Spill	<input type="checkbox"/>
Chemical precipitation	<input checked="" type="checkbox"/>	Flow equalization	<input checked="" type="checkbox"/>	Ion exchange	<input type="checkbox"/>	Reverse osmosis	<input type="checkbox"/>	Sump	<input type="checkbox"/>
Chlorination	<input type="checkbox"/>	Grease trap	<input type="checkbox"/>	Ozonation	<input type="checkbox"/>	Septic tank	<input type="checkbox"/>		

Rainwater diversion or storage

Neutralization, pH correction

Grease or oil separation (list type)

Biological treatment (list type)

Other physical treatment (list type) GEM

Other chemical treatment (list type)

Other (list type)

4. Describe the pollutant loadings, flow rates, design capacity, physical size, and operating procedures for each treatment facility checked above (attach additional sheets if necessary)

Rotary screen fed by a flow Eq tank through Chemical dosing prior to GEM. Max Flow 3.0 MGD.

5. Attach a process flow diagram for each existing treatment system. Include process equipment, by-products, by-product disposal method, waste and by-product volumes,

6. Describe any changes in treatment or disposal methods planned or under construction for the wastewater discharge to the City of Sioux City sanitary sewer. Please include estimated completion dates

5. Process flow diagram - Attachment #2



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7. Do you have a wastewater treatment operator?				Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>		
Operator Name		Certificate Number		Phone		Email		
Desiree McCaslen		FA - 8659						
Specify Operating Hours		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Pretreatment System		24 hr	_____	_____	_____	_____	_____	→
No. of Full Time Staff		33	_____	_____	_____	_____	_____	→
No. of Part Time Staff		0	_____	_____	_____	_____	_____	→
Do you have a written manual on the correct operation of your treatment equipment?							Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Do you have a written maintenance schedule for your treatment equipment?							Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

SECTION H – FACILITY OPERATIONAL CHARACTERISTICS

1. Shift Information

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Work days		X	X	X	X	X	X	X
Shifts per work day		2	2	2	2	2	2	2
Employees per shift	1 st	14	14	14	14	14	8	8
	2 nd	8	8	8	8	8	8	8
	3 rd							
Shift start and end time	1 st	6AM-6 PM	_____	_____	_____	_____	_____	→
	2 nd	6PM-6AM	_____	_____	_____	_____	_____	→
	3 rd							

Please explain any seasonal variations to the discharge or typical shut-down times:



INCLUDE COPIES OF ALL MATERIAL SAFETY DATA SHEETS FOR ALL CHEMICALS IDENTIFIED

4. Building Layout – Include a scale map or drawing of the location of each building on the premises. Show map orientation and location of all water meters, storm drains, numbered unit processes (from schematic flow diagram), public sewers, and each facility sewer line connected to the City of Sioux City sewer. Number each sewer and show existing and proposed sampling locations. A blueprint or drawing of the facilities showing the above items may be attached in lieu of submitting a drawing on this sheet.

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PERMIT APPLICATION
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SECTION I – SPILL PREVENTION

1. Do you have chemical storage containers, tanks, vessels, etc. at your facility?

Yes

☒

No

☐

2. If yes, include all raw products, waste products, chemicals, cleaning supplies, etc. stored on-site in quantities greater than 10 gallons for liquids or 50 lbs for solids. Indicate if additional sheets are attached.

Product/Item Stored	Maximum Quantity Stored (Include Units)	Location and Container Type	Floor Drains in Vicinity
Muriatic Acid	525 gallons	Internal / Totes	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sodium hydroxide	525 gallons	Internal / Totes	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Ferric Chloride	12,000 gallon	External / Tank	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Anionic Polymer	~500 gallon	Internal / Tank	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Cationic Polymer	~500 gallon	Internal / Tank	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

If yes was answered above in Section 2 please fill in Question 4 below

4. Where do they discharge to?

Plant return wetwell for neutralization and treatment (GEM)

5. If you have chemical storage containers, tanks, vessels, etc. in the manufacturing area, could an accidental spill lead to a discharge to (check all that apply)

An onsite disposal system

☐

Storm drain

☐

Sanitary sewer system

☐

N/A, No possible discharge to any To ground

☐

(e.g. through a floor drain)

Other

6. Do you have an accidental spill prevention plan, Slug Control Plan, or SPCC plan to prevent spills of chemicals or sludge discharges from entering the wastewater or storm collection systems?

Yes ☒

No ☐

Yes (please enclose copies with application)-

Slug Control Plan required within 90 days of issuance of permit

7. Please describe below any previous spill events (within last three years) and remedial measures taken to prevent their reoccurrence



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SECTION J – NON-DISCHARGED WASTES

1. Are any waste liquids or sludge materials generated and not disposed of in the sanitary sewer system?

Waste Generated	Quantity (Per Year)	Disposal Method
Digester Sludge	46 tons / day	Recycled / Landfill

2. Indicate which wastes identified above are disposed of at an off-site facility and which are disposed of on-site Digester Sludge off site.

3. If any of your wastes are sent to an off-site centralized waste treatment facility, identify the waste and the facility:

4. If an outside firm removes any of the above listed wastes, state the name(s) and address(es) of all waste haulers

Name	Address	Permit No.
Gill Hauling	1364 US20, Jackson, NE	

5. Have you been issued any Federal, State, or local environmental permits?
If yes, please list below

Yes



No



Permit Type/Description	Number	Permitting Entity
Stormwater Permit	NER910002	NDEQ
Air Emissions Permit	CP15008	NDEQ



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SECTION L – AUTHORIZED SIGNATURES

1. Compliance Certification

2. Are all applicable Federal, State, or local pretreatment standards and requirements being met on a consistent basis?

Yes ☒ No (if no answer question below) ☐ Not Yet Discharging ☐

3. What additional operations and maintenance procedures are being considered to bring the facility into compliance? Also, list additional treatment technology or practice being considered in order to bring the facility into compliance

4. Provide a schedule for bringing the facility into compliance. Specify major events planned along with reasonable completion dates. Note that if the City of Sioux City issues a permit to the applicant, it may establish a schedule for compliance different from the one submitted by the

Milestone Activity	Completion Date



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5. Authorized Representative Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Desiree

First Name

Regulatory Compliance Director

Title

Desiree McCaslen

Signature

McCaslen

Last Name

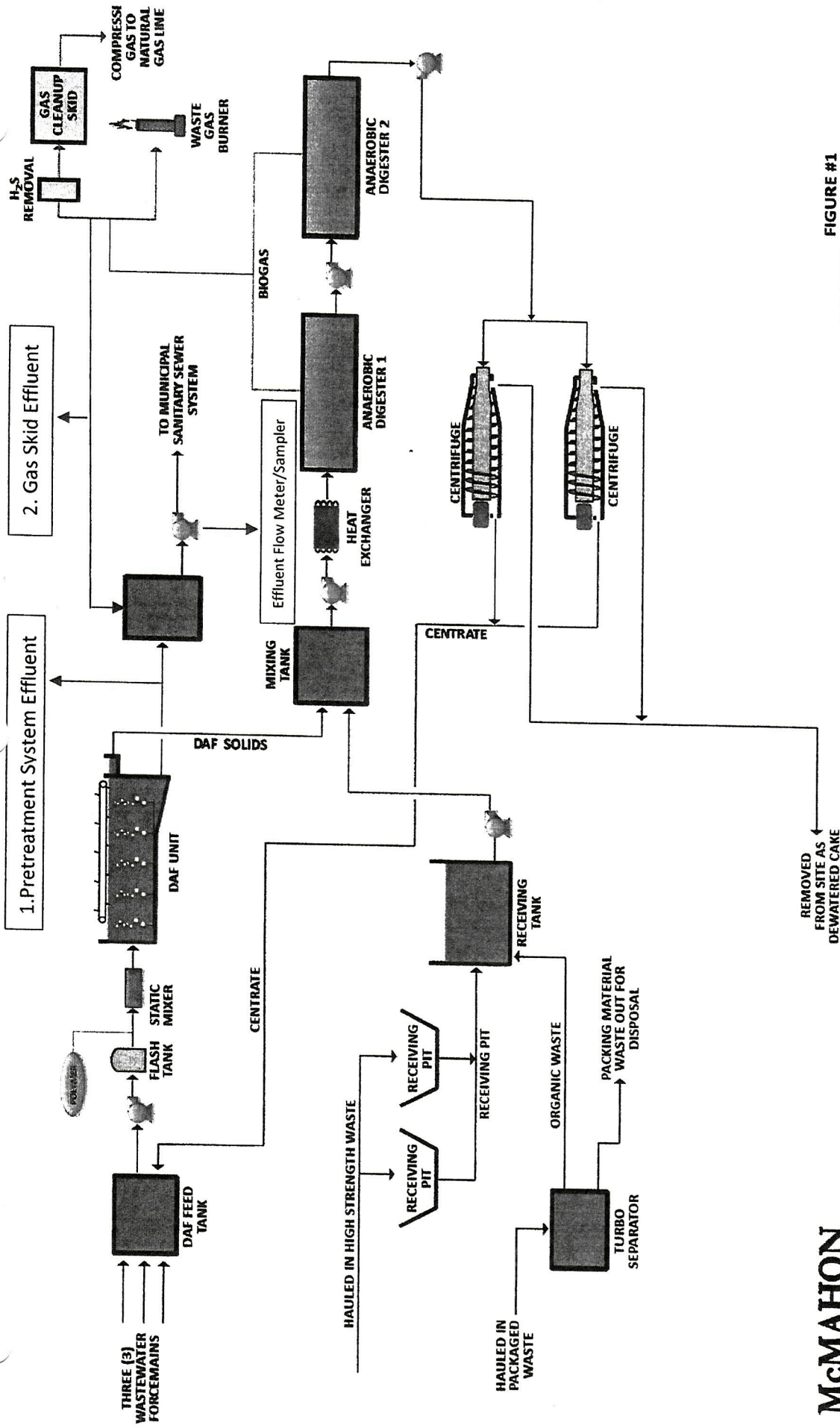
8/29/17

Date

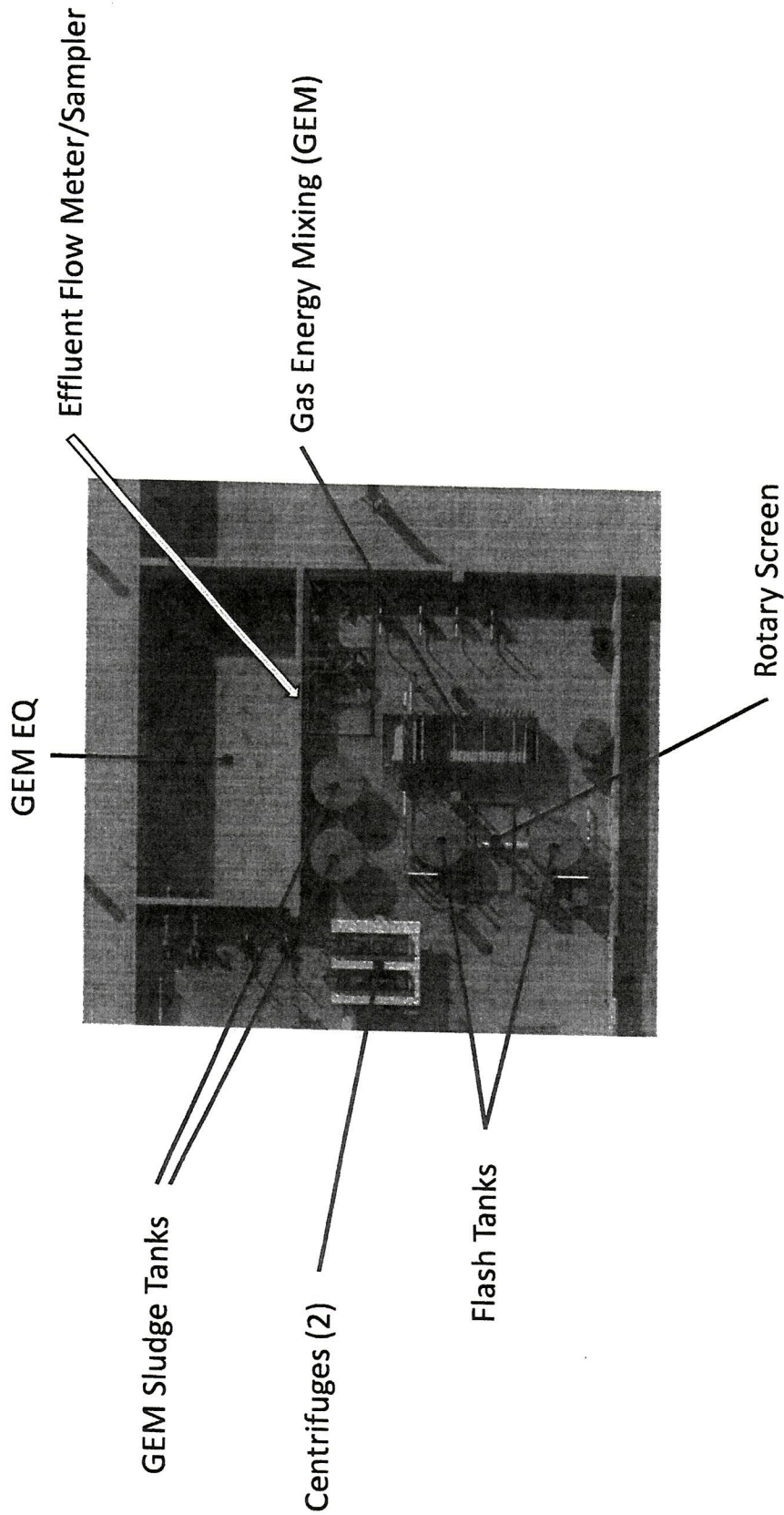
APPENDIX A- PRIORITY POLLUTANT SYNONYM LISTING

Chemical Compound	Synonym
Asbestos	Actinolite, Amosite, Antophyllite, Chrysotile, Crocidolite, Tremolite
Cyanide	Hydrogen Cyanide, Potassium Cyanide, Sodium Cyanide
Antimony	Stibium
Arsenic	Arsenia
Beryllium	Glucinium
Lead	Plumbum
Mercury	Hydrargyrum; Liquid Silver, Quick Silver
Silver	Argentum
Acenaphthene	1,2-Dihydroacenoaphthylene; Periethylenenaphthalene; 1,8-Ethylenenaphthalene
Acrolein	2-Propenal; Propenal; Allyl aldehyde, Acraldehyde; Acrylaldehyde, Acrylic aldehyde, Aqualin
Acrylonitrile	2-Propenenitrile; Propenenitrile, Vinyl cyanide, Cyanoethylene; Acrilet; Fumigrain; Ventox; Acrylonitrile monomer
Aldrin	1,2,3,4,10, 10-Hexachloro- 1,4,4a,5,8,8a-Hexahydro-1,4:5,8-Dimethanonaphthalene; HHDN; Compound 118; Octalene
Benzene	Benzol; Cyclohexatriene, Phenyl hydride
Benidine	4,4'-Bianiline; 4,4'-Biphenyldiamine; 1,1'- Biphenyl-4,4'-diamine; 4,4'-Diaminobiphenyl; p-Diaminodiphenyl
Benzo(a)anthracene	1,2-Benzanthracene, 2,3- Benzphenanthrene
Benzo(a)pyrene	3,4-Benzopyrene
Benzo(b)fluoranthene	2,3-Benzfluoranthene 2,3-Benzofluoranthene 3,4-Benz(e)acephenathylene 3,4-Benzofluoranthene 3,4-Benzofluoranthene Benz(e)fluoranthene
Benzo(g,h,i)perylene	1,12-Benzoperylene
Benzo(k)fluoranthene	11,12-Benzofluoranthene
g-BHC (gamma)	Lindane
bis(2-chlorethoxl) methane	2,2'-Dichlorethyl ether
Dichlorodifluoromethane	Difluorodichloromethane, Fluorocarbon-12
1,1' dichloroethane	Ethylidene chloride
1,2-dichloroethane	Ethylene chloride, Ethylene dichloride
1,1-dichloroethane	1,1-Dichloroethylene
trans-1,2-dichloroethene	Acetylene dichloride
1,2-dichloropropane	Propylene dichloride
(cis & trans) 1,3- dichloropropane	(cis & trans) 1,3 Dichloropropylene
Diethylphthalate	Ethyl phthalate
2,4-dimethylphenol	2,4-zylenol
di-n-octyl phthalate	Di(2-ethylhexyl)phthalate
4,6-dinitro-2- methylphenol	4,6-Dinitro-octyl-cresol
1,2-diphenylhydrazine	Hydrazobenzene
Endosulfan I	a-Endosulfan-alpha
Endosulfan II	b-Endosulfan-beta
Fluorene	(alpha)-Diphenylene methane
Hexachlorbenzene	Perchlorobenzene
Hexachlorcyclopentadiene	Perchlorocyclopentadiene
Hexachloroethane	Perchloroethane
indeno-(1,3,3-cd) pyrene	2,3-ortho-Phenylene pyrene
Isophorone	3,5,5-Trimethyl-2- Cyclohexene-1-one
Methylene chloride	Dichloromethane

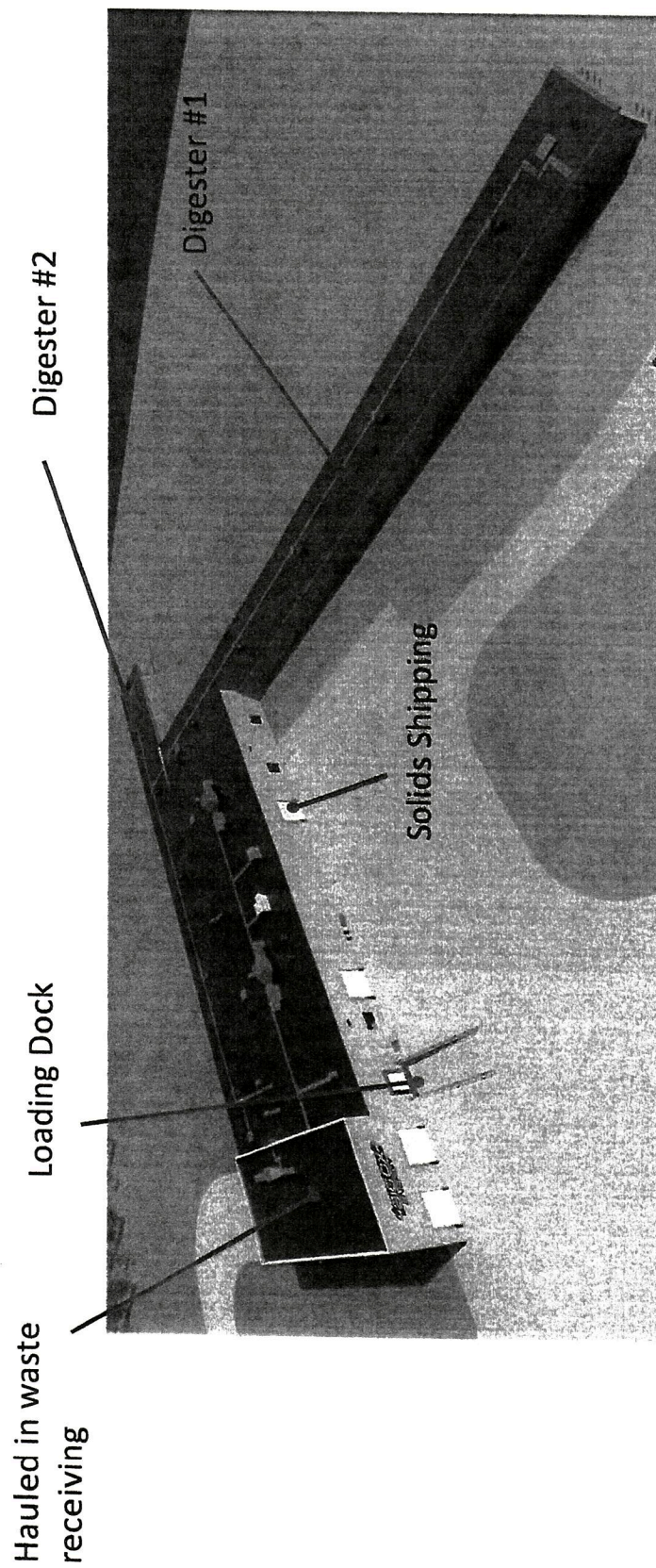
Chemical Compound	Synonym
bis(2-chloroisopropyl) ether	2,2'-Dichloroisopropyl ether
bis(chloromethyl) ether	(sym) Dichloromethyl ether
bis(2-ethylhexyl) phthalate	2,2'-Diethylhexyl phthalate
Bromodichloromethane	Dichlorobromomethane
Bromoform	Tribromomethane
Bromomethane	Methyl bromide
carbon tetrachloride	Tetrachloromethane
4-chloro-3-methylphenol	Para-chloro-meta-cresol
chloromethane	Ethylchloride
chloroform	Trichloromethane
chloromethane	Methyl chloride
2-chlorophenol	Para-chlorophenol
Chrysene	1,2-Benzphenanthrene
4,4'-DDD	Dichlorodiphenyldichloroethane, p,p'-tde, Tetrachlorodiphenylethane
4,4'-DDE	Dichlorodiphenyldichloroethylene
4,4'-DDT	Dichlorodiphenyltrichloroethane
Dibenzo(a,h)anthracene	1,2,5,6-dibenzanthracene
Dibromochloromethane	Chlorodibromomethane
1,2-dichlorobenzene	Ortho-dichlorobenzene
1,2-dichlorobenzene	Meta-dichlorobenzene
1,4-dichlorobenzene	Para-dichlorobenzene
2-nitrophenyl	Para-nitrophenyl
4-nitrophenyl	Ortho-nitrophenyl
N-nitrosodimethylamine	Dimethylnitrosoamine
N-nitrosodi-n- propylamine	n-Nitro-di-n-propylamine
N-nitrosodiphenylamine	Diphenyl-nitrosoamine
PCP-1018	Arochlor-1018
PCB-1221	Arochlor-1221
PCB-1232	Arochlor-1232
PCB-1242	Arochlor-1242
PCB-1248	Arochlor-1248
PCB-1254	Arochlor-1254
PCB-1260	Arochlor-1260
2,3,7,8-tetrachlorodibenzo-p- dioxin	TCDD
1,1,2,2-tetrachloroethene	Acetylene tetrachloride
Tetrachloroethene	Perchloroethylene, Tetrachloroethylene
Toluene	Methylbenzene toluol
1,1,1-trichloroethane	Methyl chloroform
1,1,2-trichloroethane	Vinyl trichloride
Trichloroethane	Trichloroethylene
Trichlorofluoromethane	Fluorocarbon-11; Fluorotrichloromethane
Vinyl chloride	Chloroethene; Chloroethylene

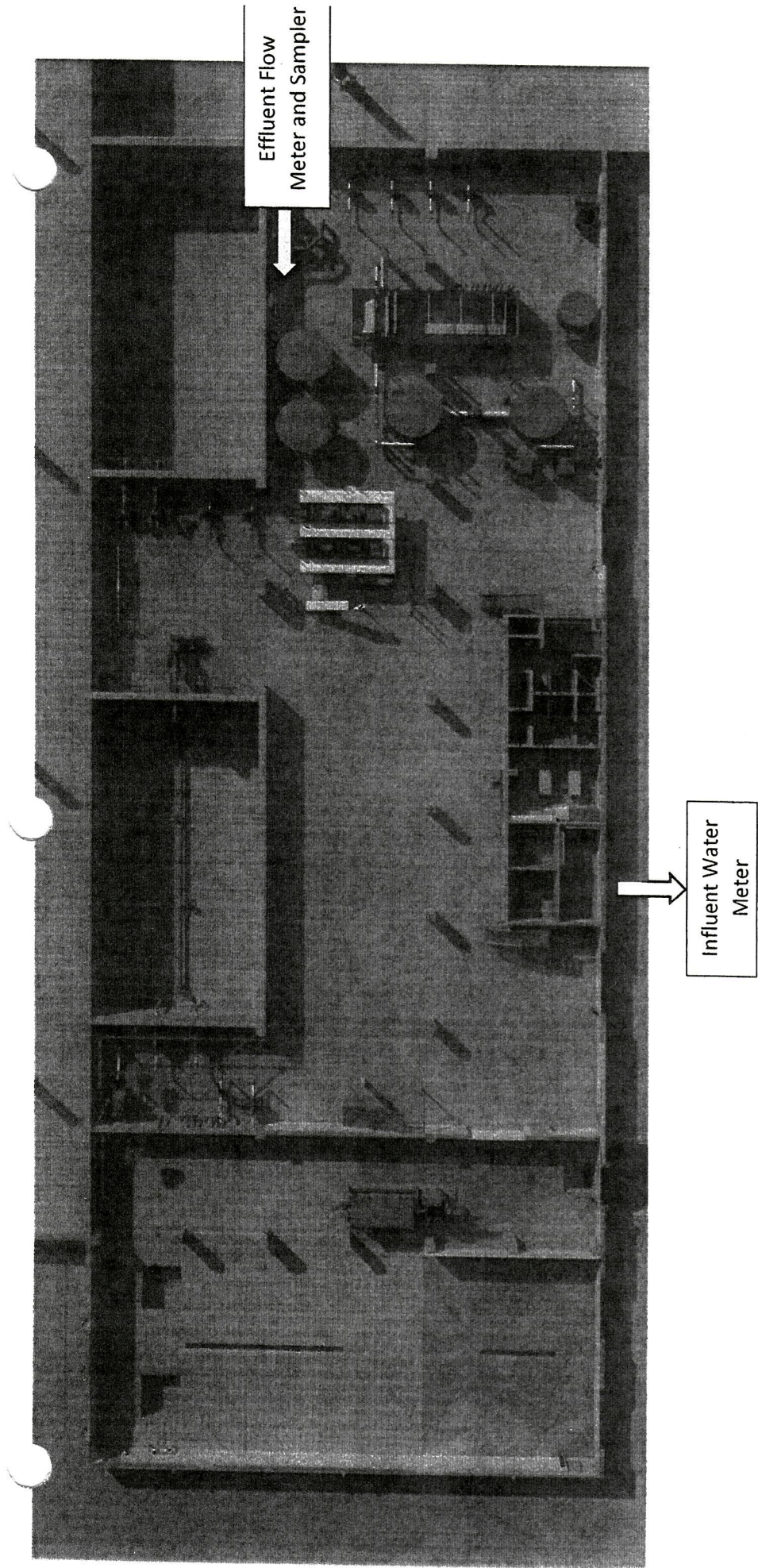


Attachment #2-Effluent Processing



Attachment #3A-Facility Overview





Attachment #3B-Inside Facility Overview



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Muriatic Acid (7-23 deg. Baume)
PRODUCT ID: 0130
SYNONYMS: Hydrochloric Acid; Muriatic Acid; Hydrogen Chloride; HCl
ISSUE DATE: 09/05/2002
EDITION NO.: 15

PPG Industries, Inc.
One PPG Place, Pittsburgh, PA 15272, USA
24-hour Emergency Telephone Number: 1-304-843-1300
For Product Information (8am-5pm Eastern time):
1-800-243-6774 (C/A)

PREPARER: Product Safety, Chemicals

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Material/CAS Number</u>	<u>Percent</u>
----------------------------	----------------

Hydrochloric Acid 7647-01-0	10-38
--------------------------------	-------

(10.15% @ 7, 14.85% @ 10, 18.0% @ 12, 22.92% @ 15, 27.9% @ 18, 31.5% @ 20, 35.2% @ 22, 37.1% @ 23 deg. Baume')

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

DANGER! Corrosive - Causes severe burns to eyes and skin. Causes severe burns of the digestive tract. Severely irritating to the respiratory tract and mucous membranes.

Precautions: Do not get in eyes, on skin, or on clothing. This product is corrosive and can cause severe burns. It can cause severe irritation and/or burns to the skin. Even small amounts splashed into the eyes can cause blindness. Do not breathe mist or vapors. Vapor may cause severe irritation of nasal and respiratory tract. Use only with adequate ventilation. Ventilation must be sufficient to limit employee exposure to this product below permissible exposure limits. Wash thoroughly every day after work. Do not swallow. Swallowing can cause severe internal burns and may be fatal. Do not eat, drink or smoke in work area.

4. FIRST AID MEASURES

INHALATION: Remove from area to fresh air. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

EYE/SKIN CONTACT: **EYE:** Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. Contact a poison control center, emergency room or physician right away as further treatment will be necessary. **SKIN:** Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Do Not induce vomiting. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

5. FIRE FIGHTING MEASURES

FLASH POINT: None

EXTINGUISHING MEDIA: Not applicable.

SPECIAL FIREFIGHTING PROCEDURES: Contact with most metals can rapidly generate hydrogen, which is explosive.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Unprotected personnel should move upwind of spill. Only personnel equipped with proper respiratory and eye/skin protection should be permitted in the area. Dike area to contain spill. Dilute spill with large amounts of water then neutralize with dilute caustic or soda ash. Use a vacuum truck to pick up neutralized material for proper disposal. Properly neutralized liquid residues (pH 6 to 9) may be disposed of in waste water treatment facilities which allow the discharge of neutral salt solutions. After all visible traces have been removed, flush area with large amounts of water.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE:

Wear appropriate personal protective equipment when handling this product. Wear respiratory protection whenever exposure to vapor is likely. Prevent acid from contacting strong alkalies or metals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

8-hour Time Weighted Average (TWA); 15-minute Short-Term Exposure Limit (STEL)

OSHA: 5 ppm (7 mg/cu.m.) Ceiling. 29 CFR 1910.1000

RESPIRATORY PROTECTION: Use NIOSH approved combination dust/mist and acid gas cartridge or canister respirator for routine work purposes when air concentrations exceed the permissible exposure limit.

VENTILATION: Use local exhaust or general room/dilution ventilation sufficient to maintain employee exposure below permissible exposure limits.

EYE AND FACE PROTECTION: Close fitting chemical safety goggles with faceshield.

PROTECTIVE GLOVES: Nitrile. Neoprene. Natural rubber. Polyvinylchloride (PVC).

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, or chemical suits should be used when necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Azeotrope 108°C (20.2%)
VAPOR DENSITY (Air=1): >1
SPECIFIC GRAVITY (Water=1): 1.051/1.074/1.090/1.115/1.142/1.16/1.179/1.189 *
pH: Acidic
FREEZING/MELTING POINT: NA/NA/NA/-95/-68.3/44.5/23.8/17.5°F *
SOLUBILITY (wt.% in water): Complete
BULK DENSITY: 8.8/9.0/9.1/9.3/9.5/9.7/9.8/9.9 lbs/gal *
VOLUME % VOLATILE: 100
VAPOR PRESSURE: 15/13/11/10/14/24/100/150 mm Hg *
EVAPORATION RATE: NA
HEAT OF SOLUTION: Extremely exothermic
PHYSICAL STATE: Liquid
ODOR: Pungent, irritating.
COLOR: Clear water white to slightly yellow

*At 7/10/12/15/18/20/22/23 deg. baume' respectively.

10. STABILITY AND REACTIVITY

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITY (CONDITIONS/MATERIALS TO AVOID):
Contact with metals. Strong alkalies.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS:
Flammable hydrogen gas.

11. TOXICOLOGICAL INFORMATION

ACUTE INHALATION LC50: 3124 ppm (rat) (1 hour). Slight to very low toxicity.
SKIN IRRITATION: Corrosive.
EYE IRRITATION: Corrosive.
ACUTE ORAL LD50: 900 mg/kg (rabbit) Moderate toxicity. Corrosive.

MEDICAL CONDITIONS AGGRAVATED: None known.

EFFECTS OF OVEREXPOSURE:

ACUTE:

Inhalation: Muriatic acid mists or hydrogen chloride vapors are severely irritating to the respiratory tract and mucous membranes. Inhalation of sufficiently high concentrations may result in laryngeal spasms and/or edema, and lead to rapidly developing pulmonary edema. Mists may also cause bleeding of the nose and gum, ulceration of the nasal and oral mucosa, and severe skin and eye irritation.

Eye/skin: Muriatic acid is corrosive to the eyes and skin. Direct eye contact can result in blindness even after a short exposure to small amounts.

Ingestion: Ingestion of muriatic acid causes severe burns of the digestive tract because of its corrosive nature and may be fatal.

CHRONIC: The effects of long-term, low level exposures to this product have not been determined. Safe handling of this material on a long-term basis should emphasize the prevention of all contact with this material to avoid any effects from repetitive acute exposures.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

No data at this time.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:

Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

Proper Shipping Name: Hydrochloric Acid Solution
Hazard Class: 8 (Corrosive)
UN Number: UN1789
Packing Group: II
USA-RQ, Hazardous Substance and Quantity: 5000 lbs./2270 kg. (Hydrochloric

acid)

Marine Pollutant:

None

15. REGULATORY INFORMATION**USA TSCA:** All components of this product are listed on the TSCA Inventory.**EUROPE EINECS:** All components in this product are listed on EINECS.**CANADA DOMESTIC SUBSTANCES LIST (DSL):** This product and/or all of its components are listed on the Canadian DSL.**AUSTRALIA AICS:** All components of this product are listed on AICS.**KOREA ECL:** All components in this product are listed on the Korean Existing Chemicals Inventory (KECI).**JAPAN MITI (ENCS):** All components in this product are listed on the Japanese Existing and New Chemical Substances (ENCS) chemical inventory.**PHILIPPINES PICCS:** All of the components in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS).**SARA TITLE III:****SARA (311, 312) Hazard Class:**

Acute Health Hazard. Reactive Hazard. Sudden Release of Pressure.

SARA (313) Chemicals:

This product contains toxic chemical(s) listed below which is(are) subject to the reporting requirement of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

HYDROGEN CHLORIDE//7647-01-0

SARA Extremely Hazardous Substance:

Liquid not listed as an Extremely Hazardous substance, but hydrogen chloride gas is listed.

CERCLA Hazardous Substance:

The following materials are listed as CERCLA Hazardous Substances in Table 302.4 of 40 CFR Part 302: Hydrogen chloride (7641-01-1) RQ = 5000 lbs./2270 kg.

CANADA REGULATIONS (WHMIS): Class E - Corrosive Material. Class D1A - Very Toxic Materials.**16. OTHER INFORMATION****Other Information:**

NSF Drinking Water Treatment Chemicals Listing - PPG hydrochloric acid from Beauharnois, Quebec, Canada, is certified for maximum use at 40 mg/l under ANSI/NSF Standard 60.

In case of emergency in Canada, contact PPG Canada, Inc., B.P.2010, Beauharnois, Quebec J6N 3C3, 450-429-3552, or Canutec 613-996-6666.

The following has been revised since the last issue of this MSDS:

Date. Edition. Section 8 has been updated. Section 13 has been updated. Section 14 has been updated. Section 15 has been updated. Section 16 has been updated.

Previous revision date: 08/15/2001
Previous edition number: 014

NA = Not Available

CAUSTIC SODA LIQUID 50% FG
Product ID: AL005800

Disposal: Dispose of in accordance with local, regional and international regulations.

Hazards Not Otherwise Classified: Reacts with most metals to form explosive/flammable hydrogen gas. May react violently with water. May react with various food sugars to form carbon monoxide.

Percentage of Components with Unknown Acute Toxicity:

Oral: 50.0 %
Inhalation Vapor: 50.0 %
Inhalation Dust/Mist: 50.0 %

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	% by Wt.
Sodium Hydroxide	1310-73-2	50 %
Water	7732-18-5	50 %

4. FIRST-AID MEASURES

Eye Contact: If in eyes: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Tilt head to avoid contaminating unaffected eye. Get immediate medical attention. Washing eyes within several seconds is essential to achieve maximum effectiveness. Do not attempt to neutralize with chemical agents. Oils or ointments should not be used at this time. Remove contact lenses after the first 5 minutes and continue flushing.

Skin Contact: If on skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Do not reuse clothing and shoes until cleaned. If skin feels slippery, caustic may still be present in sufficient quantities to cause rash or burn. Continue washing skin until slick feeling is gone. Do not apply oils or ointments unless ordered by the physician. Discard footwear which cannot be decontaminated. Discard contaminated leather articles such as shoes and belt.

Inhalation: If inhaled: Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration, preferably mouth-to-mouth. GET MEDICAL ATTENTION IMMEDIATELY. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

Ingestion: If swallowed: If fully conscious, drink a quart of water. DO NOT induce vomiting. CALL A PHYSICIAN IMMEDIATELY. If unconscious or in convulsions, take immediately to a hospital or a physician. NEVER induce vomiting or give anything by mouth to an unconscious victim. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. If vomiting occurs spontaneously, keep airway clear and give more water.

Note to Physicians:

The absence of visible signs or symptoms of burns does not reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

Most Important Symptoms/Effects:

Eye Contact: CORROSIVE-Causes severe irritation and burns. Small amounts may cause: blistering, disintegration, scarring, clouding, ulcerations, permanent eye damage, blindness, corneal damage. Mist may cause: irritation. High mist concentrations may cause: tissue destruction. Glaucoma and cataracts are possible late developments. Effects may vary depending on length of exposure, solution concentration and first aid measures.

Skin Contact: CORROSIVE-Causes severe irritation and burns. Corrosive action causes burns and frequently deep ulceration with ultimate scarring. Note that irritation may follow an initial latency. The latency may vary as much as hours for dilute solutions to minutes for more concentrated solutions. Prolonged contact, even with dilute concentrations, can cause tissue destruction and permanent skin damage. Repeated exposure may cause: dermatitis (inflammation of the skin).

SAFETY DATA SHEET

CAUSTIC SODA LIQUID 50% FG

Product ID: AL005800

Revised: 06-25-2014

Replaces: 06-24-2014

1. IDENTIFICATION

Product Name: CAUSTIC SODA LIQUID 50% FG
Synonyms: Lye; Sodium Hydroxide Solution; Alkali; Caustic; Sodium Hydrate
CAS Number: MIXTURE
Recommended Use: No data available.
Restrictions on Use: No data available.

Hydrite Chemical Co.
300 N. Patrick Blvd.
Brookfield, WI 53008-0948
(262) 792-1450

EMERGENCY RESPONSE NUMBERS:
24 Hour Emergency #: (414) 277-1311
CHEMTREC Emergency #: (800) 424-9300

2. HAZARD(S) IDENTIFICATION



Signal Word: Danger

GHS Classification: Substance or mixture corrosive to metals Category 1
Skin Corrosion/Irritation Category 1B
Serious Eye Damage/Eye Irritation Category 1
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1

Hazard Statements: May be corrosive to metals.
Causes severe skin burns and eye damage.
Causes damage to organs (respiratory system by inhalation).

Precautionary Statements:

Prevention: Keep only in original container.
Do not breathe dust, fume, gas, mist, vapors or spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear gloves, eye and face protection and protective clothing.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Specific treatment (see First Aid on SDS or on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.

Storage: Store in a secure manner.
Store in corrosive resistant container with a resistant inner liner.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OSHA Exposure Guidelines:

<u>Component</u>	<u>Limits</u>
Sodium Hydroxide	2 mg/m3 TWA

ACGIH Exposure Guidelines:

<u>Component</u>	<u>Limits</u>
Sodium Hydroxide	2 mg/m3 Ceiling

Engineering Controls: General room ventilation is required. To keep exposure below established limits, local exhaust may be necessary. Avoid creating dust or mist. Maintain adequate ventilation. Do not use in closed or confined spaces. Keep levels below exposure limits. To determine exposure levels, monitoring should be performed regularly. NOTE: Where carbon monoxide may be generated, special ventilation may be required.

Eye/Face Protection: Wear chemical safety goggles and a full face shield while handling this product. Do not wear contact lenses.

Skin Protection: Prevent contact with this product. Wear gloves and protective clothing depending on condition of use. Protective gloves: Natural rubber. Butyl rubber. Neoprene. Nitrile. Polyvinyl chloride. Polyethylene.

Respiratory Protection: Respiratory protection may be required to avoid overexposure when handling this product. If exposure limits are exceeded, wear: NIOSH-Approved respirator for dusts and mists. NIOSH-Approved Supplied Air Respirator (SAR). NIOSH-Approved self-contained breathing apparatus. DO NOT exceed limits established by the respirator manufacturer. All respiratory protection programs must comply with OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements and must be followed whenever workplace conditions require a respirator's use.

Other Protective Equipment: Eye-wash station. Safety shower. Rubber apron. Rubber boots. Protective clothing.

General Hygiene Conditions: Wash with soap and water before meal times and at the end of each work shift.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid.

Color: Clear to slightly turbid. Colorless to slightly colored.

Odor: No odor.

Odor Threshold: N.D.

pH: 14.00

Freezing Point (deg. F): < 60

Melting Point (deg. F): ~50-58

Initial Boiling Point or Boiling Range: ~ 284 - 293 °F

Flash Point: N.A.

Flash Point Method: N.A.

Evaporation Rate (nBuAc = 1): N.D.

Flammability (solid, gas): N.D.

Lower Explosion Limit: N.A.

Upper Explosion Limit: N.A.

Vapor Pressure (mm Hg): ~1-1.5 @ 20C

Vapor Density (air=1): N.D.

Specific Gravity or Relative Density: 1.528 @ 25C

Solubility in Water: Complete

Partition Coefficient (n-octanol/water): N.D.

Autoignition Temperature: No Data

Decomposition Temperature: N.D.

Viscosity: N.D.

% Volatile (wt%): N.D.

VOC (wt%): 0

CAUSTIC SODA LIQUID 50% FG
Product ID: AL005800

Skin Absorption: No absorption hazard expected under normal use.

Inhalation: CORROSIVE-Causes severe irritation and burns. Dusts or mists may irritate: nose, mouth, throat, respiratory tract. Dusts or mists may cause damage to the: upper respiratory tract, lungs. May cause: coughing, sneezing, running nose, sore throat, shortness of breath, wheezing, tightness of the chest, chest pain, choking, impaired lung function, pneumonitis, pulmonary edema. Effects may be delayed.

Ingestion: CORROSIVE-Causes severe irritation and burns. May cause damage to the: mouth, throat, stomach, esophagus, gastrointestinal tract. Ingestion can cause severe burns and complete tissue perforation of the mucous membranes of the mouth, throat and stomach. May be fatal if swallowed. May cause: abdominal pain, nausea, vomiting, diarrhea, bleeding, fall in blood pressure, shock, collapse, gastrointestinal ulceration. Damage may appear days after exposure. Aspiration into the lungs may occur during ingestion or vomiting resulting in mild to severe pulmonary injury and possibly death.

5. FIRE-FIGHTING MEASURES

Extinguishing Media: Not combustible. For fires in area use appropriate media. For example: Water spray, Dry chemical, Carbon dioxide, Foam, Halon.

Fire Fighting Methods: Evacuate area of unprotected personnel. Wear protective clothing including NIOSH-Approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers, but avoid getting water into containers. Product generates heat upon addition of water, with possible spattering. Run-off from fire control may cause pollution.

Fire and Explosion Hazards: Product may react with some metals (ex.: Aluminum, Zinc, Tin, etc.) to release flammable hydrogen gas.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide, Sodium oxides, Irritating and/or toxic gases.

6. ACCIDENTAL RELEASE MEASURES

Spill Clean-Up Procedures: CORROSIVE MATERIAL. Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limit. Contain spill, place into drums for proper disposal. Neutralize remaining residue with dilute Hydrochloric Acid solution and dispose of properly. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs. CAUTION: This product may react violently with acids and water.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area. Wash thoroughly after handling. CORROSIVE MATERIAL. Avoid dust or mist formation. Add product very slowly while stirring constantly. If product is added too rapidly or without stirring and becomes concentrated at the bottom of the mixing vessel, excessive heat may be generated resulting in dangerous boiling and spattering and possible immediate violent irruption of highly caustic solution.

Storage: CORROSIVE MATERIAL. Store in a cool, well ventilated area, out of direct sunlight. Store in a dry location away from heat. Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers. Highly corrosive to most metals with evolution of hydrogen gas. Do not freeze. Do not expose sealed containers to temperatures above 104 Deg. F. Deadly carbon monoxide gas can form in enclosed or poorly ventilated areas or tanks when alkaline products contact food, beverage, or dairy products. Do not enter such areas until they have been well ventilated and carbon monoxide and oxygen levels have been determined to be within OSHA acceptable limits. If carbon monoxide and oxygen levels cannot be measured, wear NIOSH-approved, self-contained breathing apparatus. See Section 10 for incompatible materials.

CAUSTIC SODA LIQUID 50% FG
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nausea, vomiting, diarrhea, bleeding, fall in blood pressure, shock, collapse, gastrointestinal ulceration. Damage may appear days after exposure. Aspiration into the lungs may occur during ingestion or vomiting resulting in mild to severe pulmonary injury and possibly death.

Medical Conditions Aggravated by Exposure to Product: Skin disorders. Lung disorders. Cardiovascular disorders. Eye disorders. Respiratory system disorders.

Other: None known.

Cancer Information:

This product does not contain 0.1% or more of the known or potential carcinogens listed in NTP, IARC, or OSHA.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: Extensive data, call for information.

Chemical Fate Information: Extensive data, call for information.

13. DISPOSAL CONSIDERATIONS

Hazardous Waste Number: D002

Disposal Method: Dispose of in a permitted hazardous waste management facility following all local, state and federal regulations. If approved, neutralize material and flush to sewer. DO NOT pressurize, cut, weld, solder, drill, grind or expose empty containers to heat, flame, sparks or other sources of ignition.

14. TRANSPORT INFORMATION

DOT (Department of Transportation):

Identification Number: UN1824
Proper Shipping Name: Sodium Hydroxide Solution
Hazard Class: 8
Packing Group: II
Label Required: CORROSIVE
Reportable Quantity (RQ): 1000# (Sodium Hydroxide).

15. REGULATORY INFORMATION

TSCA Inventory Status: This product or all components of this product are listed on the EPA/TSCA Inventory of Chemical Substances.

SARA Title III Section 311/312 Category Hazards:

	<u>Immediate (Acute)</u>	<u>Delayed (Chronic)</u>	<u>Fire Hazard</u>	<u>Pressure Release</u>	<u>Reactive</u>			
	Yes	No	No	No	Yes			
Regulated Components:								
Component		CAS	CERCLA	SARA	SARA	U.S.	WI	Prop
		Number	RQ	EHS	313	HAP	HAP	65
Sodium Hydroxide		1310-73-2	Yes	No	No	No	Yes	No

***Prop 65 - May Contain the Following Trace Components:**

This product may contain trace amounts of some chemicals subject to California's Proposition 65.

16. OTHER INFORMATION

Hazard Rating System

Health: 3
Flammability: 0
Reactivity: 1

CAUSTIC SODA LIQUID 50% FG
Product ID: AL005800

VOC (lbs/gal): 0
Fire Point: N.D.

10. STABILITY AND REACTIVITY

Reactivity: No data available.

Chemical Stability: Stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur under normal conditions. Sodium hydroxide can induce hazardous polymerization of acetaldehyde, acrolein, and acrylonitrile. Contact with water may cause violent reaction with evolution of heat. To dilute: Add product slowly to lukewarm water; not water to product. Contact with acid or incompatible materials may cause a violent reaction with evolution of heat. May react with certain metals to produce flammable hydrogen gas. Contact with acids, halogenated organics, organic nitro compounds, glycols, or sodium tetrahydroborate may produce flammable hydrogen gas. Contact with 1,2-dichloroethylene, trichloroethylene, tetrachloroethane, or phosphorous can form spontaneously flammable chemicals. Reactions with various food sugars may form carbon monoxide.

Conditions to Avoid: Avoid moisture. Avoid extreme temperatures. Keep away from incompatibles.

Incompatible Materials: Acids. Metals such as aluminum, zinc, tin, etc. Magnesium. Chromium. Brass. Bronze. Copper. Lead. Other alkali sensitive metals or alloys. Organic materials. Organic nitro compounds. Chlorinated hydrocarbons. Fluorinated hydrocarbons. Acetaldehyde. Chlorine trifluoride. Hydroquinone. Maleic anhydride. Tetrahydrofuran. Acrolein. Phosphorous. Trichloroethylene. Leather. Wool. Phosphorous pentoxide. Halogenated compounds. Glycols. Explosives. Acrylonitrile. 1,2-Dichloroethylene. Tetrachloroethane. Organic peroxides. Sodium tetrahydroborate. Food sugars. Silver nitrate. Ammonia. Chloroform. Methanol. Zirconium.

Hazardous Decomposition Products: Hydrogen gas. Carbon monoxide. Flammable dichloroacetylene. Phosphine. Thermal decomposition may release: Sodium oxide.

11. TOXICOLOGICAL INFORMATION

Component	Oral LD50	Dermal LD50	Inhalation LC50
Sodium Hydroxide	No Data	Rabbit: 1350 mg/kg	No Data

Acute Toxicity Estimate (ATE):

Dermal: 2,700 mg/kg

Routes of Exposure: Eyes. Skin. Inhalation. Ingestion.

Eye Contact: CORROSIVE-Causes severe irritation and burns. Small amounts may cause: blistering. disintegration. scarring. clouding. ulcerations. permanent eye damage. blindness. corneal damage. Mist may cause: irritation. High mist concentrations may cause: tissue destruction. Glaucoma and cataracts are possible late developments. Effects may vary depending on length of exposure, solution concentration and first aid measures.

Skin Contact: CORROSIVE-Causes severe irritation and burns. Corrosive action causes burns and frequently deep ulceration with ultimate scarring. Note that irritation may follow an initial latency. The latency may vary as much as hours for dilute solutions to minutes for more concentrated solutions. Prolonged contact, even with dilute concentrations, can cause tissue destruction and permanent skin damage. Repeated exposure may cause: dermatitis (inflammation of the skin).

Skin Absorption: No absorption hazard expected under normal use.

Inhalation: CORROSIVE-Causes severe irritation and burns. Dusts or mists may irritate: nose. mouth. throat. respiratory tract. Dusts or mists may cause damage to the: upper respiratory tract. lungs. May cause: coughing. sneezing. running nose. sore throat. shortness of breath. wheezing. tightness of the chest. chest pain. choking. impaired lung function. pneumonitis. pulmonary edema. Effects may be delayed.

Ingestion: CORROSIVE-Causes severe irritation and burns. May cause damage to the: mouth. throat. stomach. esophagus. gastrointestinal tract. Ingestion can cause severe burns and complete tissue perforation of the mucous membranes of the mouth, throat and stomach. May be fatal if swallowed. May cause: abdominal pain.

CAUSTIC SODA LIQUID 50% FG

Product ID: AL005800

* = Chronic Health Hazard

NFPA Rating System

Health: 3

Flammability: 0

Reactivity: 1

Special Hazard: None

MSDS Abbreviations

N.A. = Not Applicable

N.D. = Not Determined

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

C = Ceiling Limit

N.E./Not Estab. = Not Established

MSDS Prepared by: JAK

Reason for Revision: Changes made throughout the SDS. New format.

Revised: 06-25-2014

Replaces: 06-24-2014

The data in this Safety Data Sheet relates to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as warranty or representation for which HYDRITE CHEMICAL CO. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.



Safety Data Sheet

Revision Date Mar-15-2015

Item # 10244

Safety Data Sheet 0235

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Ferric Chloride Solution DWG Grade
UN/ID No. UN2582
Synonyms Iron (III) Chloride, Iron trichloride, FeCl₃
Recommended Use Water treatment chemical
Uses advised against Consumer uses: Private households (= general public = consumers).

Company Name

PVS Technologies, Inc.
10900 Harper Ave.
Detroit, MI 48213
(313) 571-1100

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

Emergency Overview

DANGER

Hazard statements

Causes severe skin burns and eye damage
Harmful if swallowed

Physical hazards

Corrosive
May be corrosive to metals



Precautionary statements

Prevention

- Wear eye/face protection
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash face, hands and any exposed skin thoroughly after handling
- Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see section 4 on this Safety Data Sheet)
- Store in a secure area
- Dispose of contents/container to an approved waste disposal plant

Response

Storage

Disposal

Hazards not otherwise classified (HNOC)

None known.

Other Information

Other hazards

- Toxic to aquatic life with long lasting effects
- Toxic to aquatic life

Item # 10244 Ferric Chloride Solution DWG Grade

Unknown Acute Toxicity

0.85% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-% *
Water	7732-18-5	231-791-2	55-69
Iron trichloride	7705-08-0	231-729-4	31-45
Hydrogen chloride	7647-01-0	231-595-7	0.0-1.0
Ferrous chloride	7758-94-3	231-843-4	0.0-0.7

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

General advice

- Immediate medical attention is required

Eye contact

- Immediate medical attention is required
- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
- Do not rub affected area

Skin Contact

- Immediate medical attention is required
- Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes
- Wash contaminated clothing before reuse

Inhalation

- Call a physician or poison control center immediately
- Remove to fresh air
- If not breathing, give artificial respiration
- If breathing is difficult, give oxygen

Ingestion

- Call a physician or poison control center immediately
- Do NOT induce vomiting
- Rinse mouth
- Drink 4 to 8 ounces (120-240 ml) of water or milk as soon as possible after ingestion.
- Never give anything by mouth to an unconscious person

Note to physician

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.

Self-protection for first aid personnel

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

- Dry chemical, CO₂, water spray or alcohol-resistant foam
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media

- Caution: Use of water spray when fighting fire may be inefficient
- Do not use a solid water stream as it may scatter and spread fire

Specific hazards arising from the chemical

- The product causes burns of eyes, skin and mucous membranes
- Thermal decomposition can lead to release of irritating and toxic gases and vapors
- In the event of fire and/or explosion, do not breathe fumes

Protective equipment and precautions for firefighters

- Wear a self-contained breathing apparatus and chemical protective clothing

Flammable properties
Explosive properties

- No information available
- No information available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

- Evacuate personnel to safe areas
- Use personal protective equipment as required
- Avoid contact with skin, eyes or clothing
- Keep people away from and upwind of spill/leak

Environmental precautions

- For small spills, absorb material with clay absorbent or other compatible material. Dispose of the waste material according to local, state and governmental requirements.
- For large spills, contain the material using barriers of absorbent pigs, clay absorbent or earth dams.
- US regulations require reporting spills of this material that could reach any surface waters. The toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802

Methods for cleaning up

- Neutralize with soda ash or lime
- Take up mechanically, placing in appropriate containers for disposal
- Clean contaminated surface thoroughly
- Soak up with inert absorbent material

Other Information

- Spills exceeding the Reportable Quantity (RQ) of 1000 pounds or more must be reported to the National Response Center, (800) 424-8802.

7. HANDLING AND STORAGE

Advice on safe handling

- Use personal protective equipment as required
- Avoid contact with skin, eyes or clothing
- Ensure adequate ventilation, especially in confined areas
- In case of insufficient ventilation, wear suitable respiratory equipment
- Use only with adequate ventilation and in closed systems

Storage Conditions

- Keep container tightly closed in a dry and well-ventilated place
- Keep out of the reach of children
- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep in properly labeled containers

Incompatible materials

Incompatible with strong acids and bases, oxidizers, steel, and most metals

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m ³ Fe	-	TWA: 1 mg/m ³ Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m ³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m ³
Ferrous chloride 7758-94-3	TWA: 1 mg/m ³ Fe	(vacated) TWA: 1 mg/m ³ Fe	TWA: 1 mg/m ³ Fe

Exposure Guidelines

Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Respiratory protection

- A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

Item # 10244 Ferric Chloride Solution DWG Grade

Eye/Face protection	<ul style="list-style-type: none">• Tight sealing safety goggles• Face protection shield
Skin and body protection	<ul style="list-style-type: none">• Wear suitable protective clothing• Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact
General Hygiene Considerations	<ul style="list-style-type: none">• Do not eat, drink or smoke when using this product• Wash contaminated clothing before reuse• Contaminated work clothing should not be allowed out of the workplace• Regular cleaning of equipment, work area and clothing is recommended• Avoid contact with skin, eyes or clothing

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical state	Liquid	
Appearance	Clear to slightly hazy	
Color	Red brown	
Odor	Slight Iron acidic	
Odor threshold	No information available	
<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	<2	
Melting point/Freezing Point	-26 °C / -15 °F	
Boiling point / boiling range	110 °C / 230 °F	
Flash point	No information available	
Evaporation rate	<1	n-Butyl acetate =1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		Not flammable
Upper flammability limit (%)	No information available	
Lower flammability limit (%):	No information available	
Vapor pressure	No information available	negligible
Vapor density	No information available	
Specific Gravity	1.40	
Water solubility	Miscible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	
<u>Other Information</u>		
Softening point °C	No information available	
Molecular weight	No information available	
VOC Content (%)	No information available	
Density	No information available	
Bulk density	11.7 Pounds per gallon (lb/gal), Typical	

10. STABILITY AND REACTIVITY

Stability	<ul style="list-style-type: none">• Stable under recommended storage conditions
Conditions to avoid	<ul style="list-style-type: none">• Exposure to air or moisture over prolonged periods
Incompatible materials	<ul style="list-style-type: none">• Incompatible with strong acids and bases, oxidizers, steel, and most metals

Item # 10244 Ferric Chloride Solution DWG Grade

Hazardous Decomposition Products • Thermal decomposition can lead to release of irritating and toxic gases and vapors

Possibility of Hazardous Reactions • None under normal processing and storage

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principle Routes of Exposure

Inhalation

Ingestion

Skin Contact

Eye contact

Inhalation Skin Contact Eye contact

May cause irritation of respiratory tract. Avoid breathing vapors or mists.

May cause adverse kidney effects. May cause adverse liver effects.

Contact causes severe skin irritation and possible burns.

Corrosive to the eyes and may cause severe damage including blindness.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron trichloride 7705-08-0	= 450 mg/kg (Rat)	>2000 mg/kg (rat)	-
Hydrogen chloride 7647-01-0	= 700 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 3124 ppm (Rat) 1 h
Ferrous chloride 7758-94-3	450	-	-

Information on toxicological effects

Symptoms

Vomiting, Hypoxemia (reduced O2 in the blood), Metabolic Acidosis

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Hydrogen chloride 7647-01-0	-	Group 3	-	-

Reproductive toxicity

No information available.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Chronic toxicity

Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects. May cause adverse liver effects.

Target Organ Effects

Eyes, Gastrointestinal tract (GI), Liver, Respiratory system, Skin.

Aspiration hazard

No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity

0.85% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document . mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity

Toxic to aquatic life with long lasting effects

0.85% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Iron trichloride 7705-08-0	-	20.95 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 Static

Persistence and degradability

No information available.

Bioaccumulation

No information available

Item # 10244 Ferric Chloride Solution DWG Grade

Chemical Name	Partition coefficient
Iron trichloride 7705-08-0	-4

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Disposal of wastes • This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261)
Contaminated packaging • Do not reuse container
US EPA Waste Number • D002

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Iron trichloride 7705-08-0	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

Proper shipping name FERRIC CHLORIDE, SOLUTION
Hazard Class 8
UN/ID No. UN2582
Packing Group III
RQ (lbs)(dry) 1000
RQ as is (lbs)(wet) 2222 (45% Ferric Chloride)
Description UN2582, Ferric chloride, solution, 8, III
Special Provisions B15, IB3, T4, TP1
Emergency Response Guide Number 154

IATA

UN/ID No. UN2582
Proper shipping name FERRIC CHLORIDE SOLUTION
Hazard Class 8
Packing Group III
ERG Code 8L
Special Provisions A3

IMDG

UN/ID No. UN2582
Proper shipping name FERRIC CHLORIDE, SOLUTION
Hazard Class 8
Packing Group III
EmS-No. F-A, S-B
Special Provisions 223

15. REGULATORY INFORMATION

US Federal Regulations

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Item # 10244 Ferric Chloride Solution DWG Grade

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Iron trichloride 7705-08-0	1000 lb	-	-	X
Hydrogen chloride 7647-01-0	5000 lb	-	-	X
Ferrous chloride 7758-94-3	100 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	RQ (lbs)(dry)
Iron trichloride 7705-08-0	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Hydrogen chloride 7647-01-0	5000 lb	5000 lb	RQ 5000 lb final RQ RQ 2270 kg final RQ
Ferrous chloride 7758-94-3	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Iron trichloride 7705-08-0	X	X	X
Ferrous chloride 7758-94-3	X	X	X

Chemical Name	U.S. - DEA - List I or Precursor Chemicals	U.S. - DEA - List II or Essential Chemicals
Hydrogen chloride 7647-01-0	-	50 gallon, Export Volume 27 kg, Export Weight 0 kg, Domestic Sales Weight

International Inventories

TSCA	Complies
DSL/NDL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 ENCS - Japan Existing and New Chemical Substances
 IECSC - China Inventory of Existing Chemical Substances
 KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances

16. OTHER INFORMATION

Item # 10244 Ferric Chloride Solution DWG Grade

NFPA

Health hazards 3

Flammability 0

Instability 0

Physical and Chemical
Properties -
Personal protection D

HMIS

Health hazards 3

Flammability 0

Physical hazards 0

Item #

10244

Safety Data Sheet

0235

Revision Date

Mar-15-2015

Issue Date

Mar-15-2015

Version

1

Revision Note

*** Updated value on SDS.

Disclaimer

All information, statements, data, advice, and/or recommendations, including, without limitation, those relating to storage, loading/unloading, piping, and transportation (collectively referred to herein as "information") are believed to be accurate, reliable, and based on reliable industry and regulatory references. However, no representation or warranty, express or implied, is made as to its completeness, accuracy, fitness for a particular purpose or any other matter, including, without limitation, that the practice or application of any such information is free of patent infringement or other intellectual property misappropriation. The Company providing this SDS is not engaged in the business of providing technical, operational, engineering, or safety information for a fee, and therefore, any such information provided herein has been furnished as an accommodation and without charge. All information provided herein is intended for use by persons having requisite knowledge, skill, and experience in the chemical industry. The Company providing this SDS shall not be responsible or liable for the use, application, or implementation of the information provided herein, and all such information is to be used at the risk, and in the sole judgment and discretion of such persons, their employees, advisors, and agents. This safety data sheet (SDS) is offered for your information, consideration, and investigation as required by federal hazardous products act and related legislation.

End of Safety Data Sheet

MEGAFLOC 5383**1 PRODUCT AND COMPANY IDENTIFICATION**

Product Identifier: MEGAFLOC 5383
Common Name: Mixture
SDS Number: 0362
Product Code: WT0119
Revision Date: 4/20/2015
Version: 2
Internal ID: 110B
Product Use: Waste Water Clarification Aid
Supplier Details: U.S. Water Services
12270 43rd St. NE
St. Michael, MN 55376

Contact: Non-emergency #: 866-663-7632
Email: SDS@uswaterservices.com
Web: www.uswaterservices.com

EMERGENCY RESPONSE: (ChemTel)
US & Canada: 800-255-3924
International: +01-813-248-0585

2 HAZARDS IDENTIFICATION**Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):**

Health, Serious Eye Damage/Eye Irritation, 2 B
Health, Skin corrosion/irritation, 3

GHS Label elements, including precautionary statements

GHS Signal Word: **WARNING**

GHS Hazard Pictograms:

**NO GHS PICTOGRAMS INDICATED FOR
THIS PRODUCT**

GHS Hazard Statements:

H320 - Causes eye irritation
H316 - Causes mild skin irritation

GHS Precautionary Statements:

P281 - Use personal protective equipment as required.
P302+352 - IF ON SKIN: Wash with soap and water.
P305+351+338 - IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Hazards not otherwise classified (HNOC) or not covered by GHS

MEGAFLOC 5383

PPE recommendation is advisory only and based on typical use conditions. An industrial hygienist or safety officer familiar with the specific situation of anticipated use must determine actual PPE required when using this product (29 CFR 1910.132)

3**COMPOSITION/INFORMATION ON INGREDIENTS****Ingredients:**

This product does not contain any components that are considered hazardous under OSHA regulations (29 CFR 1200)

4**FIRST AID MEASURES**

Inhalation: Remove from contamination. If symptoms persist, seek medical attention.
Skin Contact: Wash off with soap and plenty of water. Consult a physician if irritation develops.
Eye Contact: Flush eyes with plenty of running water for 15 minutes. Seek medical attention if irritation persists.
Ingestion: If discomfort or other symptoms develop, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms & effects (acute & delayed): No data available

Indication of need for immediate medical attention: No data available

Special treatment needs: No data available

5**FIRE FIGHTING MEASURES**

Flash Point: Not applicable
Flash Point Method: Not applicable
Burning Rate: No data available
Autoignition Temp: No data available
LEL: Not applicable
UEL: Not applicable

Extinguishing Media:

Suitable: Use extinguishing media suitable for surrounding fire.

Unsuitable: No information available

Hazardous combustion products: Hazardous decomposition products formed under fire conditions- Carbon oxides, and other hazardous compounds

Unusual Fire or Explosion Hazards: None known

Special protective equipment/precautions: Wear self-contained breathing apparatus

6**ACCIDENTAL RELEASE MEASURES**

Personal Precautions, Protective equipment, emergency procedures: Avoid contact with the material. See section 8 of SDS for PPE recommendations

Environmental Precautions: Keep runoff from entering drains or waterways

MEGAFLOC 5383

Spill/Leak procedures: Contain spill or leak. Dike area if necessary to prevent spill from spreading or entering sewers and waterways. Recover as much as possible then absorb remainder with inert material. Place into closed container for disposal.

Regulatory Requirements: Dispose of recovered material in accordance with all applicable state and federal regulations.

7

HANDLING AND STORAGE

Handling Precautions: Avoid contact with eyes, skin, or clothing. Do not taste or swallow. Do not inhale vapor or mist. Use with adequate ventilation. For industrial use only!

Storage Requirements: Store in closed containers away from temperature extremes and incompatible materials. Store in properly labeled containers in accordance with all local, state and federal guidelines.

8

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Provide local exhaust ventilation as needed to control misting.

Personal Protective Equipment: HMIS PP, B | Safety Glasses, Gloves

Respiratory protection: If needed use MSHA/NIOSH approved respirator. Seek professional advice prior to respirator selection and use. Follow all requirements of OSHA respirator regulations (29 CFR 1910.134)

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

General Hygiene: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, using the toilet, or applying cosmetics.

PPE recommendation is advisory only and based on typical use conditions. An industrial hygienist or safety officer familiar with the specific situation of anticipated use must determine actual PPE required when using this product (29 CFR 1910.132)

Exposure Limits:

OSHA (TWA)/PEL: Not Established

ACGIH (TWA/TLV): Not Established

9

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White
Physical State: Granular solid
Odor Threshold: Not determined
Spec Grav./Density: Not determined
Viscosity: Not determined
Boiling Point: Not determined
Partition Coefficient: Not determined
Vapor Pressure: Not determined
pH: 2.5-4.5 @ 5g/L
Evap. Rate: Not determined
Decomp Temp: Not determined

Odor: None
Solubility: Not determined
Freezing/Melting Pt.: Not determined
Flash Point: None
Vapor Density: Not determined
Bulk Density: 7.089 lb/gal
Auto-Ignition Temp: Not determined
UFL/LFL: Not determined

MEGAFLOC 5383**10****STABILITY AND REACTIVITY**

Stability:	Product is stable under normal storage and use conditions.
Conditions to Avoid:	Avoid temperature extremes. Protect from freezing
Materials to Avoid:	Strong Oxidizing Agents may cause exothermic reaction
Hazardous Decomposition:	Thermal decomposition may produce hydrogen chloride gas, carbon oxides, and nitrogen oxides.
Hazardous Polymerization:	Will not occur.

11**TOXICOLOGICAL INFORMATION****Acute Toxicity:**

Dermal: The results of testing on rabbits showed this material to be non-toxic even at high dose levels.

Oral: LD₅₀ Oral Rat > 5000 mg/kg

Inhalation: The product is not expected to be toxic by inhalation.

Sensitization: The results of testing on Guinea pigs showed this material to be non-sensitizing.

Chronic Toxicity: A two-year feeding study on rats did not reveal adverse health effects. A one-year feeding study on dogs did not reveal adverse health effects.

Carcinogenicity: No carcinogenic effects are known for the components of this product

Germ Cell Mutagenicity: No mutagenic effects are known for the components of this product

Teratogenicity: No teratogenic effects are known for the components of this product

12**ECOLOGICAL INFORMATION****Aquatic Toxicity:**

Toxicity to fish: LC₅₀ 96-hr = 5-10 mg/L

Toxicity to daphnia: EC₅₀ 48-hr = 20-50 mg/L

Toxicity to algae: Algal inhibition tests are not appropriate. The flocculation characteristics of this product interfere directly in the test medium preventing homogenous distribution which invalidates the test.

Environmental Degradation:

Hydrolysis: At natural pHs (>6) the polymer degrades due to hydrolysis to more than 70% in 28 days. The hydrolysis products are not harmful to aquatic organisms.

Bioaccumulation: Does not bio-accumulate

Persistence/degradability: Not readily biodegradable

Other ecological information: The effects of this product on aquatic organisms are rapidly and significantly mitigated by the presence of dissolved organic carbon in the aquatic environment. Results obtained using the US EPA "Dirty Water" test show that irreversible absorption onto suspended matter and dissolved organics (such as humic and other organic acids) present in natural waters, reduces the toxicity to aquatic organisms by a factor of over 10.

MEGAFLOC 5383

13 DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations.

This material should be fully characterized for toxicity and possible reactivity prior to disposal (40 CFR 261). Use which results in chemical or physical change or contamination may subject it to regulation as a hazardous waste. Along with properly characterizing all waste materials, consult state and local regulations regarding the proper disposal of this material.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

14 TRANSPORT INFORMATION

Proper Shipping Name: Non-regulated

DOT Transportation data (49 CFR 172.101)

15 REGULATORY INFORMATION

TSCA: All components of this product are listed (or are not required to be listed) in the TSCA inventory
REGULATORY KEY DESCRIPTIONS

TSCA = Toxic Substances Control Act

TSCA: All components of this product are listed (or are not required to be listed) in the TSCA inventory

EPA / CERCLA / SARA TITLE III:

CERCLA List: This product does not contain any CERCLA listed hazardous substances.

Toxic Chemical List (SARA 313): This product does not contain any chemicals subject to routine annual toxic chemical release reporting.

Extremely Hazardous Substance (SARA 302/304): This product does not contain any extremely hazardous substances subject to emergency planning requirements.

SARA 312: No data available

RCRA: No data available

MEGAFLOC 5383**16****OTHER INFORMATION**

HMIS III: Health = 1, Fire = 1, Physical Hazard = 0
HMIS PPE: B - Safety Glasses, Gloves

HMIS	
HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

Author: U.S. Water Services

Revision Notes: Updated to GHS format

Disclaimer:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s). The above information is not claiming characteristics of the product in term of legal claims of performance / guarantee. This information only describes safety measures and no liability may arise from the use or application of the product described herein. This information is given in good faith and based on our current knowledge of the product.

MEGAFLOC 6401**1****PRODUCT AND COMPANY IDENTIFICATION**

Product Identifier: MEGAFLOC 6401
Common Name: MIXTURE
SDS Number: 0828
Revision Date: 2/18/2015
Version: 1
Internal ID: 210C
Product Use: Flocculant
Supplier Details: U. S. Water Services
12270 43rd St. NE
St. Michael, MN 55376

Contact: Non-emergency #: 866-663-7632
Email: SDS@uswaterservices.com
Web: www.uswaterservices.com

EMERGENCY RESPONSE: (ChemTel)
US & Canada: 800-255-3924
International: +01-813-248-0585

2**HAZARDS IDENTIFICATION****Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):**

Health, Serious Eye Damage/Eye Irritation, 2 B
Health, Skin corrosion/irritation, 3
Health, Specific target organ toxicity - Single exposure, 3

GHS Label elements, including precautionary statements**GHS Signal Word:** **WARNING****GHS Hazard Pictograms:****GHS Hazard Statements:**

H320 - Causes eye irritation
H316 - Causes mild skin irritation
H335 - May cause respiratory irritation

GHS Precautionary Statements:

P281 - Use personal protective equipment as required.
P302+352 - IF ON SKIN: Wash with soap and water.
P305+351+338 - IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P301+330+331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

MEGAFLOC 6401

Hazards not otherwise classified (HNOC) or not covered by GHS

PPE recommendation is advisory only and based on typical use conditions. An industrial hygienist or safety officer familiar with the specific situation of anticipated use must determine actual PPE required when using this product (29 CFR 1910.132)

3**COMPOSITION/INFORMATION ON INGREDIENTS****Ingredients:**

Anionic water-soluble polymer

4**FIRST AID MEASURES**

- Inhalation:** Remove from contamination. If person has difficulty breathing administer oxygen. Seek medical attention if difficulties persist.
- Skin Contact:** Wash off with plenty of soap and water. Remove contaminated garments and wash or destroy. Consult a physician if irritation persists.
- Eye Contact:** Flush eyes with plenty of running water for at least 15 minutes. Seek medical attention if irritation persists.
- Ingestion:** Seek medical attention. Do not induce vomiting unless instructed by a physician.

Most important symptoms & effects (acute & delayed):

Indication of need for immediate medical attention: No data available

Special treatment needs: No data available

5**FIRE FIGHTING MEASURES**

- Flash Point:** None
- Burning Rate:** Not applicable
- Autoignition Temp:** Not applicable
- LEL:** Not available
- UEL:** Not available

Extinguishing Media: Water, foam, CO₂, Dry Chemical

Suitable: Use extinguishing media appropriate for surrounding fire.

Unsuitable: No information available

Hazardous combustion products: Burning or thermal decomposition may produce carbon oxides, and other potentially hazardous compounds.

Unusual Fire or Explosion Hazards: None known

Special protective equipment/precautions: Wear self-contained breathing apparatus

MEGAFLOC 6401

6

ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective equipment, emergency procedures: Avoid contact with the material. See section 8 of SDS for PPE recommendations

Environmental Precautions: Keep runoff from entering drains or waterways

Spill/Leak procedures: Contain spill or leak. Spilled material is very slippery when wet. Dike area if necessary to prevent spill from spreading or entering sewers and waterways. Recover as much as possible then absorb remainder with inert material. Place into closed container for disposal.

Regulatory Requirements: Dispose of recovered material in accordance with all applicable state and federal regulations.

7

HANDLING AND STORAGE

Handling Precautions: Avoid contact with eyes, skin, or clothing. Do not taste or swallow. Do not inhale vapor or mist. Use with adequate ventilation. To avoid product degradation, and equipment corrosion, do not use iron, copper or aluminum containers or equipment. For industrial use only!

Storage Requirements: Keep away from children. Store in closed containers away from temperature extremes and incompatible materials. Store in a dry, well ventilated area. Keep containers tightly closed, and properly labeled. Store in accordance with all local, state and federal guidelines

8

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Provide local exhaust ventilation as needed to control misting.

Personal Protective Equipment: HMIS PP, C | Safety Glasses, Gloves, Apron

Respiratory protection: If exposure levels are exceeded a respirator must be used. If needed use a MSHA/NIOSH approved respirator. Seek professional advice prior to respirator selection and use. Follow all requirements of OSHA respirator regulations (29 CFR 1910.134)

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

General Hygiene: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, using the toilet, or applying cosmetics.

PPE recommendation is advisory only and based on typical use conditions. An industrial hygienist or safety officer familiar with the specific situation of anticipated use must determine actual PPE required when using this product (29 CFR 1910.132)

Exposure Limits:

OSHA (TWA)/PEL: Not Established

ACGIH (TWA/TLV): Not Established

MEGAFLOC 6401**9 PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	White	Odor:	No appreciable odor
Physical State:	Granular solid	Solubility:	Not determined
Odor Threshold:	Not determined	Freezing/Melting Pt.:	Not determined
Spec Grav./Density:	Not determined	Flash Point:	None
Viscosity:	Not determined	Vapor Density:	Not determined
Boiling Point:	Not determined	Auto-Ignition Temp:	Not determined
Partition Coefficient:	Not determined	UFL/LFL:	Not determined
Vapor Pressure:	Not determined		
pH:	4-9 (5g/L in water)		
Evap. Rate:	Not determined		
Decomp Temp:	Not determined		

10 STABILITY AND REACTIVITY

Stability:	Product is stable under normal storage and use conditions.
Conditions to Avoid:	Avoid temperature extremes. Keep container closed when not in use. Protect from freezing.
Materials to Avoid:	Oxidizing agents may cause exothermic reaction.
Hazardous Decomposition:	Thermal decomposition may produce. Hydrogen chloride gas. Nitrogen oxides (NOX). Carbon oxides (COX).
Hazardous Polymerization:	Will not occur.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity:	No data available
Skin Corrosion/Irritation:	No data available
Serious eye damage/irritation:	No data available
Respiratory or skin sensitization:	No data available
Specific target organ toxicity (single exposure):	No data available
Specific target organ toxicity (repeated exposure):	No data available
Aspiration hazard:	No data available
Carcinogenicity:	No carcinogenic effects are known for the components of this product
Germ Cell Mutagenicity:	No mutagenic effects are known for the components of this product
Teratogenicity:	No teratogenic effects are known for the components of this product

12 ECOLOGICAL INFORMATION

Aquatic Toxicity	No data available
Elimination (persistence & degradability):	No data available
Bioaccumulative potential:	No data available
Mobility in soil:	No data available
Other adverse effects:	No data available

MEGAFLOC 6401**13 DISPOSAL CONSIDERATIONS**

Dispose of in accordance with local regulations.

This material should be fully characterized for toxicity and possible reactivity prior to disposal (40 CFR 261). Use which results in chemical or physical change or contamination may subject it to regulation as a hazardous waste. Along with properly characterizing all waste materials, consult state and local regulations regarding the proper disposal of this material.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

14 TRANSPORT INFORMATION

Proper Shipping Name: Non-regulated

DOT Transportation data (49 CFR 172.101)

15 REGULATORY INFORMATION

COMPONENT / (CAS/PERC) / CODES

TSCA: All components of this product are listed (or are not required to be listed) in the TSCA inventories

REGULATORY KEY DESCRIPTIONS

TSCA = Toxic Substances Control Act

EPA / CERCLA / SARA TITLE III:

CERCLA List: This product does not contain any CERCLA listed hazardous substances.

Toxic Chemical List (SARA 313): This product does not contain any chemicals subject to routine annual toxic chemical release reporting.

Extremely Hazardous Substance (SARA 302/304): This product does not contain any extremely hazardous substances subject to emergency planning requirements.

SARA 312: No data available

California Proposition 65: This product does not contain any chemicals known to the state of California to cause cancer, birth defects, or any other reproductive harm.

RCRA: No data available

MEGAFLOC 6401**16****OTHER INFORMATION**

HMIS III: Health = 1, Fire = 1, Physical Hazard = 0
HMIS PPE: C - Safety Glasses, Gloves, Apron

HMIS	
HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	C

Author: U.S. Water Services

Revision Notes: Updated to GHS format

Disclaimer:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s). The above information is not claiming characteristics of the product in term of legal claims of performance / guarantee. This information only describes safety measures and no liability may arise from the use or application of the product described herein. This information is given in good faith and based on our current knowledge of the product.



Purpose:

Big Ox Energy-Siouxland, LLC (BOE) manages the receipt, handling, and processing of hauled material received at its South Sioux City, Nebraska biogas manufacturing plant in accordance with this Hauled Material Acceptance Plan ("Plan"). This plan ensures that only BOE only receives material that is compatible for treatment and reduces potential impacts to the operation of the City of Sioux City Wastewater Treatment Plant (WWTP).

BOE refuses and avoids materials that would cause its biogas manufacturing process to function improperly (thus limiting its production of commercial sellable product (biogas)). BOE refuses and avoids materials that inhibits BOE's onsite anaerobic treatment process or affect BOE's discharge compliance with Sioux City Wastewater Discharge Permit #2016-31-I

Material Acceptance Criteria:

BOE receives organically based and biodegradable truck-hauled waste materials ("hauled materials") under contract, primarily food processing materials on an as required (random) basis. BOE distinctly approves and accepts every customer and every hauled material type. BOE requires that every customer submit a request to deliver hauled material using a Material Profile Form ("MPF"). The MPF specifies hauled material information including estimated volume, chemical analysis, a Safety Data Sheet (if applicable), or data from a material stream similar in nature to the one proposed for disposal. BOE reviews the customer's signed MPF to ensure the hauled material is free of toxic/hazardous materials and is compatible for treatment with BOE biogas operation.

BOE also independently tests the customer's material in its own laboratory to verify hauled material content prior to approval. Following approval by BOE, the customer is returned a signed and approved copy of the MPF specifying the type and amount of hauled material which BOE will accept. BOE then issues the customer a Master Service Agreement ("MSA"). BOE retains documentation of all delivered hauled materials including date(s) of receipt, load point of origination, material characteristic's, and the amount received for at least 3 years.

All hauled material loads received at BOE must have a Chain of Custody (COC) signed by the generator of the material stating that the material being delivered has not deviated from the material approved for disposal and treatment and that it does not contain hazardous or toxic material. All discharge data is tracked on the COC and in the facility's data tracking system including the pH, temperature and volume of the load delivered.

Verification Testing:

BOE performs independent sampling and analysis of hauled materials to verify that received loads have the same characteristics as specified in the MSA. If independent analysis indicates deviation from the approved MPF, the material shall be rejected for treatment until such time that a new MPF and MSA are effective. If a new MSA cannot be agreed upon then the acceptance shall be terminated indefinitely.

Material Treatment:

Hauled materials are blended for anaerobic digestion. Once accepted and processed, BOE dewateres the resulting sludge for third party disposal. BOE blends the dewatered centrate with influent industrial/sanitary wastewater, neutralizes the blend and removes solids prior to discharge to the sanitary sewer for conveyance to the Sioux City WWTP.

Material Being Accepted:

Gelatin Bone Residue
Gelatin Sludge and DAF Solids Floats and Solids
Teff Grass
Pet Food Sludge
Paunch/Manure
Slaughterhouse Flashings
Slaughterhouse Sludge and DAF Floats and Solids
Dairy Material
Municipal Wastewater/Sludge
Food Syrup

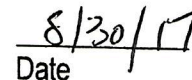
Soy Gums
Scrap Bakery and Brewery Yeast
Tannery Solids
Diatomaceous Earth
Food Producer DAF Floats and Solids
Bean Wash water
Egg Slurry
Stillage
Food Service Establishment Material
Delactose Permeate

Certification:

Based upon my inquiry of the staff and the personnel directly responsible for the preparation of this document and for meeting the criteria of the Hauled Material Acceptance Plan, I certify that the information in it is, to the best of my knowledge; true, accurate, and complete. Big Ox Energy Siouxland, LLC will abide by the provisions of the Hauled Material Acceptance Plan.



Desiree McCaslen, Director of Regulatory Compliance


Date

Attachment #1 Material Profile Form

Attachment #2 Chain of Custody



Part I - Industrial Generator Information

Company: _____

Contact: _____

Address: _____

Telephone: _____

Description of Source of Waste: _____

Part II - Generator Certification

"I hereby certify, to the best of my knowledge, that the wastewater described above does not contain hazardous waste or toxic materials as defined by Federal, State, or Municipal Code, for the waste approved by Big Ox Energy as part of the Master Service Agreement (MSA) for acceptance and treatment at Big Ox Energy. I further certify that the information listed is true and accurate and the waste being delivered has not deviated in pollutant concentration from the waste approved in the MSA."

Signature: _____ Date: _____

Part III - Carrier/Truck Information

Carrier: _____ Truck #: _____ Trailer #: _____

Part IV - Scale House/Acceptance Criteria

Date: _____ Time In: _____ AM/PM Time Out: _____ AM/PM

Full Weight: _____ lbs. Temperature Upon Delivery: _____ ° C

Empty Weight: _____ lbs. pH upon Delivery: _____ s.u.

NET Weight: _____ lbs. Scale Ticket #: _____

Incoming Seal # Top: _____ Incoming Seal # Back: _____

Outgoing Seal # Top: _____ Outgoing Seal # Back: _____

P.O. #: _____ Big Ox Employee: _____

Big Ox Energy will accept the above listed waste for disposal and treatment under the following conditions:

1. The wastewater does not contain any hazardous materials.
2. The waste must be consistent with the waste approved for disposal and treatment, any deviation from the approved waste may result in refusal of treatment.
3. This Chain of Custody must be signed by an authorized representative of the company (Industrial Generator).



REQUESTED FACILITY: _____

Generator Information (Material Origin)

Name:			
Current address:			
City:		State:	ZIP Code:
Contact Name:	Contact Email:		Phone:
Generator EPA ID:			State ID:

Billing Information

Same as Generator?		Contact Name:	
Billing Name:		Billing Address:	
City:	State:	ZIP Code:	
Phone:	E-mail:	Fax:	
Hauler Name:	PO# :	Payment Method: Account / Cash / Credit Card	

Material Information

Common Name:			
Describe Process Generating Material:			
Material Composition:		State Code:	Color:
Physical State: Solid / Liquid / Other	Free Liquid %:	pH:	
Strong Odor: Yes / No Describe:		Flash Point:	
Analytical Attached:		SDS Attached: Yes / No	

Regulatory Information

Facility SIC/NAICS Code:	Permitted under 40 CFR 403: Yes / No	Categorical Industrial User: Yes / No
Pretreatment of Wastewater: Yes / No	Classified as Hazardous Waste: Yes / No	
Please attach a list of chemicals used or stored onsite that could affect the integrity of the material being disposed of.		
Current disposal method:		

Shipping Information

One time event:	Repeat or On-going:
Estimated Quantity Per event or Week:	Unit of Measure: Tons / Pounds / Gallons / _____
Delivery Type: (trailer/container)	USDOT Shipping Name:

Generator Certification

I hereby certify, to the best of my knowledge, that the wastewater described above does not contain hazardous waste or toxic materials as defined by Federal, State, or Municipal Code, for the waste approved by Big Ox Energy as part of the Master Service Agreement (MSA) for acceptance and treatment at Big Ox Energy. I further certify that the information listed is true and accurate and the waste being delivered has not deviated in pollutant concentration from the waste approved in the MSA."

I authorize the verification of the information provided on this form as to my credit and employment. I have received a copy of this application.

Name (Print):		Date:
Title:	Company:	
Signature:		



Slug Control Plan

South Sioux City, NE

- I. Purpose
- II. Facility Information
- III. Process Summary
- IV. Chemical Usage
- V. Best Management Practices
- VI. Training
- VII. Catastrophic Failure Plan
- VIII. Notification

Attachment 1: Facility Layout

Attachment 2: Process Flow Diagram

Slug Control Plan

I. Purpose

As required by 40 CFR 403.8, Big Ox Energy (BOE) is required to develop and implement best management practices (BMP's) and engineered controls to prevent the release of pollutants that have the potential to interfere with or are incompatible for treatment by the Publicly Owned Treatment Works (POTW). A slug load is defined by federal code as being:

"A discharge of non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge which has a reasonable potential to cause interference or pass through or in any other way violate the POTW's regulations, local permits or permit conditions."

Big Ox Energy is permitted for wastewater discharge by the City of Sioux City under permit number 2016-31-I. This permit currently only contains a discharge limit for pH. The discharge limit is 5.0-11.5 s.u., however, the municipal sewer use ordinance Chapter 114-374 in South Sioux City, NE has a discharge limit for pH of no less than 5.5 s.u. and no greater than 9.5 s.u. Until the time that BOE is able to pump around Bennett Lift Station for direct conveyance to Sioux City, the effluent discharge must meet the more stringent of the two limits. At such time that the pump around is complete, the issued pH permit limit from Sioux City will be adhered to.

II. Facility Information

Facility Name:	Big Ox Energy Siouxland, LLC
Facility Address:	1616 D Ave, South Sioux City, NE 68776
Owner:	Big Ox Energy, LLC, 6601 County Road R, Denmark, WI 54208
Legal Description:	NW ¼, Section 4, Township 28N, Range 47W (Dakota County)
Location:	42.436° North Latitude, -96.422° West Longitude
Facility Contact:	Perry Winkler, (920)-615-1459, pwinkler@bigoxenergy.com
Authorized Representative:	Desiree McCaslen, (920)-615-2620, dmccaslen@bigoxenergy.com
SIC Code:	4952-Sewage System
NAICS Code:	221320-Sewage Treatment Facilities

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III. Facility Process Summary

Big Ox Energy owns and operates a renewable fuels facility that anaerobically digests organic wastes to produce biogas which is injected into the Northern Natural Gas pipeline as renewable energy and preliminary wastewater treatment system which discharges to the City of South Sioux lift station for conveyance to the Sioux City Wastewater Treatment Plant (WWTP).

The anaerobic digestion process consists of an equalization tank for hauled in organic based waste, anaerobic digesters for the breakdown of the organic waste, sludge dewatering equipment and gas handling equipment. The hauled waste receiving area is separate from the wastewater treatment system and there is no ability for a hauled in waste to directly impact the effluent quality of the wastewater discharging from the facility without first going through the anaerobic digestion process.

Following anaerobic digestion, the sludge is processed through centrifuges that dewater the sludge. The sludge is disposed of third party, and the centrate is pumped into the wastewater EQ tank. The centrate is blended with the influent industrial/sanitary wastewater and is processed through a Gas Energy Mixing (GEM) system.

The wastewater treatment system is comprised of a flow equalization tank, chemical dosing and GEM for the neutralization and solids removal of the industrial flow. Once treated the wastewater discharges to Bennett lift station in South Sioux City via force main for conveyance to the Sioux City Wastewater Treatment Plant. Each discharging industry is required to have an effluent pH meter, flow meter and sampler to ensure discharges are

Slug Control Plan

within acceptable ranges as required by South Sioux City municipal code Chapter 14. As an additional assurance, Big Ox Energy has pH meters at both Roth and BPI lift stations to monitor the pH coming into the facility.

There is the potential if the GEM system EQ tank gets to overflow level that the comingled wastewater would overflow untreated to the City of Sioux City. This overflow is captured in the effluent wet well for flow monitoring and sampling by the effluent composite sampler.

The waste streams that are collected and preliminarily treated by the GEM system are:

Waste Source:	Waste Stream:	Average Discharge Volume:
Beef Products Inc.	Meat Processing	0.900 MGD
CHS	Soy Protein Isolate	0.550 MGD
Richardson Milling	Coated Oats	0.020 MGD
Big Ox Centrifuge Centrate	Sludge Dewatering	0.225 MGD
Sanitary/Process	Sanitary/Process	0.041 MGD

The GEM system EQ tank is monitored for pH and it is adjusted as needed to keep the pH within an acceptable range for the polymers to function efficiently. The wastewater is pumped from the EQ Tank through a rotary screen, through the flash tanks where the polymers are added and to the GEM for solids separation. The solids from the rotary screen and the GEM are put back into the anaerobic digester EQ tank and the GEM system effluent discharges. The effluent flow is monitored and totalized once per day, a report is sent to Sioux City once per month. The effluent discharge is also sampled by a flow paced discrete composite sampler out of which samples are split for internal compliance testing by Big Ox and for compliance testing that is completed by Sioux City.

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The current permitted sampling requirements and limits for the wastewater discharge are as follows:

Parameter	Sample Frequency (BOE)	Sample Frequency (Sioux City)	SIU Permit Limits
TSS	Weekly	Weekly	N/A
BOD	Weekly	Weekly	N/A
FOG	Weekly	Weekly	N/A
Total Nitrogen	Weekly	Weekly	N/A
Total Phosphorous	Weekly	Weekly	N/A
pH	Continuous Process Monitor	Monthly Compliance	5.0-11.5 s.u. (Sioux City) 5.5-9.5 s.u. (South Sioux City)

IV. Chemical Usage

Chemicals are used for process control and are stored inside of the main building. There are three floor drains near the chemical storage/staging area that are connected to the main building lift pump (4,000-gallon capacity), which discharges into the GEM system EQ tank. No additional secondary containment is provided as all the floor drains in the main building discharge into the GEM system EQ tank and are monitored and adjusted for pH compliance prior to discharge.

GEM system chemicals are located near the south overhead door where they are vented and hooked up to feed the pumps that flow into the flash tanks for pH adjustment prior to the GEM. There are two floor drains in the vicinity that are connected to the main building lift pump.

Slug Control Plan

The ferric chloride bulk tank is located outside of the main building near the south overhead door. The bulk tank is double walled, which complies with secondary containment requirements for this chemical. The transfer piping is located inside the building where any discharge resulting from equipment leaks or failures would go into the floor drain system to the main building lift pump.

The gas handling chemicals are located on the southwest corner of the property in a non-class 1 area. Chemicals are stored in a small building, which serves as secondary containment and has no effect on the wastewater generated or treated at the facility.

A summary of the chemicals used or stored at the facility are as follows:

Chemical	Characteristic of Concern	Location	Volume
Muriatic Acid	Low pH	Internal	2-275 gallon totes
Sodium Hydroxide	High pH	Internal	2-275 gallon totes
Ferric Chloride	Low pH	External Bulk Tank	12,000-gal bulk tank
Anionic Polymer	Solids separation	Internal	500 gallon make up tank
Cationic Polymer	Solids separation	Internal	500 gallon make up tank
Hydraulic Oil	Acute Toxicity	Internal	55-gallon or consumer sized
Cleaning Chemicals	Low/High pH	Internal	Consumer Size <5 gallons
Lab Chemicals	Low/High pH, Acute Toxicity	Internal	Consumer Size <5 gallons

V. **Best Management Practices (BMP's)/sludge load control**

The implemented BMPs to prevent pollutants of concern from entering the process and reaching the POTW are:

Potential Source:	Pollutant of Concern:	BMP:
Main Building Chemical Staging/Storage	Sodium Hydroxide Muriatic Acid Dry Polymer Hydraulic Oil	<ol style="list-style-type: none"> 1. Daily walk through and observation of the chemical areas 2. Monthly inspection of the totes and their fittings 3. Monthly inspection/inventory of spill response kits 4. Spill Response 5. Spill Reporting 6. Annual Employee Training
GEM System	Muriatic Acid Sodium Hydroxide Cationic Polymer Anionic Polymer	
Bulk Ferric Tank	Ferric Chloride	
GEM EQ Tank	pH, TSS and BOD	<ol style="list-style-type: none"> 1. Process levels monitored by process control system 2. Automated operational controls 3. Preventative maintenance for equipment 4. Continuous pH monitoring with automated adjustment

Minor spills or leaks shall be isolated to contain the material inside the building. Plant wet well pumps shall be immediately placed in manual. If compatible for treatment, spill kits and/or absorbent socks shall be used, if necessary to contain or direct the material to the floor drain. Depending on the material spilled, the volume and the options for disposal, a decision shall be made on whether controlled discharge back through the GEM system for neutralization and treatment is acceptable or if it needs to be removed and disposed of offsite. If not compatible for treatment, material shall be captured and disposed of offsite.

Major spills shall be isolated to contain the material inside the building. Plant wet well pumps shall be immediately placed in manual. If volume spilled is manageable and compatible for treatment, spill kits and/or

Slug Control Plan

absorbent socks shall be used if necessary to contain or direct the material to the floor drain. Depending on the material spilled, the volume, and the options for disposal, a decision shall be made on whether controlled discharge back through the GEM system for neutralization and treatment is acceptable or if it needs to be removed and disposed of offsite. If volume is not manageable or is not compatible for treatment, material shall be captured and disposed of offsite.

The facility has spill containment supplies to contain and mitigate a minor and major spill event if necessary.

VI. Training

Annual training shall be completed on the Slug Control Plan as part of our Environmental Training package. Emphasis will be placed on chemical storage, safe work practices and spill prevention and response.

VII. Notification

BOE will notify South Sioux City and Sioux City immediately following a slug discharge to the sanitary sewer system. A phone call shall be made to the appropriate contact person with a follow up email documenting the type, the volume, time and duration of the slug load event and any corrective actions or BMP's put in place to prevent the same type of slug load from occurring again in the future.

Bob Livermore	South Sioux City	402-494-7534	Blivermore@southsiouxcity.org
Tom Pingel	Sioux City WWTP	712-232-8311	Tpingel@sioux-city.org

In the event of an overflow of the GEM EQ tank, BOE shall immediately notify South Sioux City and Sioux City of the overflow. The overflow volume will be calculated and reported to the Sioux City. Overflow concentrations will be collected in the facility effluent sampler as part of the flow paced 24-hour composite.

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The facility personnel responsible for compliance with this plan are:

Name	Title	Role	Shift
Perry Winkler	Plant Manager	Primary Spill Coordinator	Always Available
Richard Fields	Operations Supervisor	Primary Spill Coordinator	Always Available
Michelle Morgan	Compliance Technician	Primary Spill Coordinator	Days (M-F)
Asael	Lead Operator	Secondary Spill Response	Rotating days/nights
Jose Martinez	Lead Operator	Secondary Spill Response	Rotating days/nights (M-Sun)
Arturo	Lead Operator	Secondary Spill Response	Rotating days/nights (M-Sun)
Elijah	Lead Operator	Secondary Spill Response	Rotating days/nights (M-Sun)
Desiree McCaslen	Director of Regulatory Comp	Consultation/Advisory	Always Available

VIII. Certification

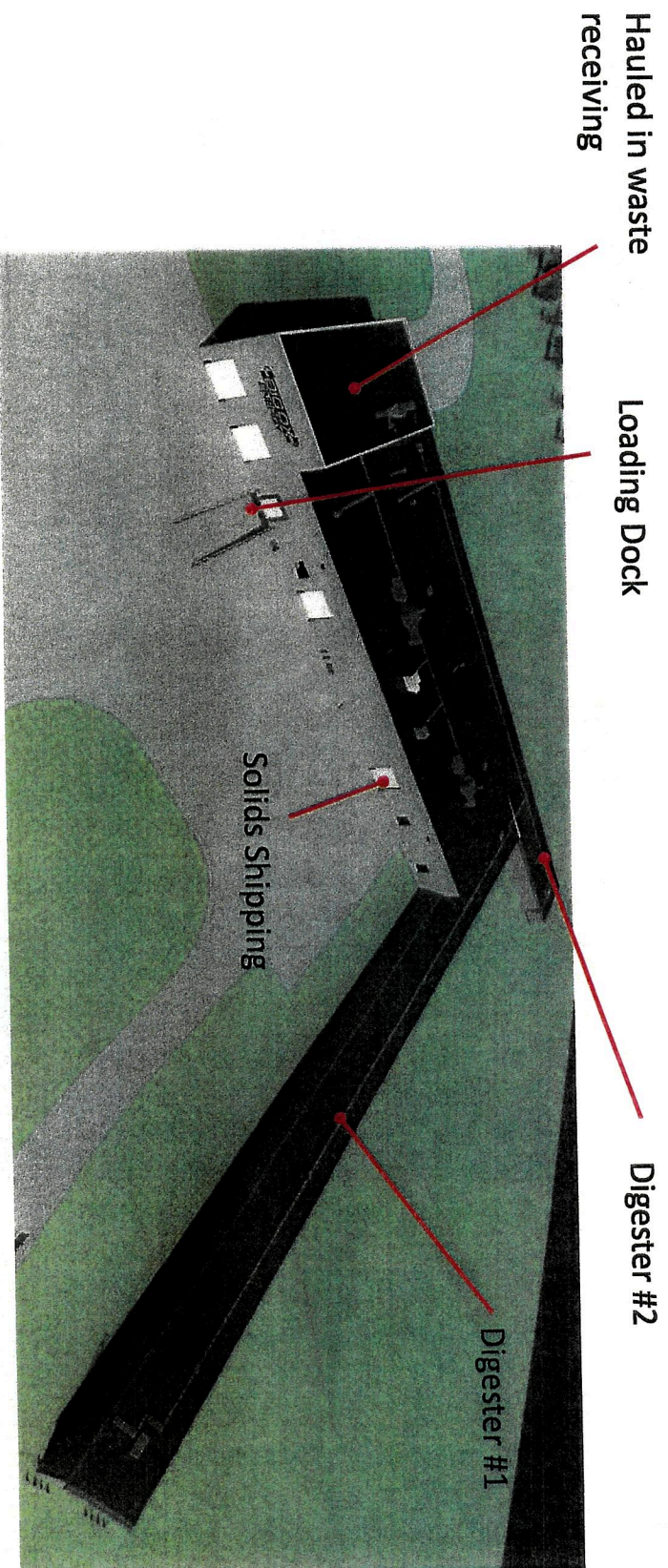
Based upon my inquiry of the staff and the personnel directly responsible for the preparation of this document, I certify that the information in it is, to the best of my knowledge; true, accurate, and complete, and that Big Ox Energy-Siouxland, LLC will abide by the provisions of this Slug Control Plan.

Desiree McCaslen

Desiree McCaslen, Director of Regulatory Compliance

8/30/17
Date

Attachment #1-Facility Overview





MAIL#51076-950180 3/30/2015
ID: 907120251MCM WITHBIG OR ENERGY SLOWDOWN PROCESS FLOW DIAGRAM PPTX 0811418



Catastrophic Failure Plan
South Sioux City, NE

Purpose:

To identify process critical equipment and addresses the mechanical failures associated that have the potential to impact facility biogas product and compliance with Wastewater Discharge Permit #2016-31-1. The catastrophic equipment failure assessment was done for the major system units and their components that potentially have a direct impact on the compliance of the wastewater discharging to the Sioux City Wastewater Treatment Plant (WWTP).

Summary:

- Failure of the valves and piping are not considered critical as they can be easily replaced with off the shelf and readily available materials.
- A chronic failure of a vessel or tank was also not considered due to the very low probability of such an event occurring and these represent a failure that can be addressed before impacting the biogas process or effluent wastewater compliance.
- Failure of the Gas Energy Mixing (GEM), centrifuges and system pumps could be catastrophic as the efficiency of the treatment process would diminish until the unit is repaired and/or replaced. The following table presents Big Ox's commitment to repair or replace critical equipment should they fail and a rough estimate of the lead time required for those efforts:

Critical Equipment	Failure Points	Operational Consequences	Contingency	Estimated Repair/Replacement Period
Centrifuge(s)	Motor	Only able to process half of the sludge generated	PM system in place.	24 hour when motor is on hand. 3-4 days otherwise
	Complete Unit Failure			30-60 days *currently quoting a third unit
	Air Saturation Blower			
	Solids Removal Skimmer			
GEM	Skimmer Chain	Inefficient solids removal and pass through to the City	PM system in place for all GEM components	One week parts repair if repair month lead time on replacement
	GEM Feed Pumps			
	GEM Recirculation Pump			
	Complete Unit Failure			
Cationic Polymer Feed Units	Chemical Feed Pump	Inadequate Coagulation and inefficient solids removal from the GEM and pass through to the City	Two units in place for redundancy	Three-week replacement period
Anionic Polymer Feed Units				
			A standby feed pump is kept in stock allowing for a quick response	Onsite maintenance team will have unit operational within hours provided replacement equipment is on hand or in stock

Effluent Wet Well Pumps	Unit Failure	Longer pump cycles on one unit leading to motor stress	Two units are in place for redundancy	Three week replacement period
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Notification:

BOE will notify the WWTP prior to making any changes to the plant operation that could impact the volume, concentration, or nature of the wastewater being generate and discharged from BOE. BOE will notify the WWTP following any of the above identified "Critical Equipment" with a summary of the impacted impact on the wastewater being generated and discharged from BOE. The notification shall include a plan of action for the repair and/or replacement of the critical equipment. A follow up email shall be sent to the WWTP once the repair and/or replacement are completed. If necessary, additional samples may be collected to aide in the alternative process modifications that can be made to reduce the pollutant concentrations discharging during an equipment failure.

Desiree McCaslen

Desiree McCaslen, Director of Regulatory Compliance

8/30/17

Date